MINK CLAIMS

HEARINGS

BEFORE

SUBCOMMITTEE NO. 2

OF THE

COMMITTEE ON THE JUDICIARY
HOUSE OF REPRESENTATIVES

EIGHTY-SECOND CONGRESS

FIRST SESSION

ON

H. R. 846, H. R. 1568, H. R. 2591, H. R. 2592
H. R. 2776, and H. R. 2777

FOR THE RELIEF OF VARIOUS MINK RANCHERS

MARCH 2, 5, AND 9, 1951

Serial No. 2

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MINK CLAIMS

FRIDAY, MARCH 2, 1951

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE NO. 2 (ON CLAIMS) OF
THE COMMITTEE ON THE JUDICIARY,
Washington, D. C.

Subcommittee No. 2 (on Claims) of the Committee on the Judiciary, House of Representatives, met in the committee room at 10 a. m., Hon. Edgar A. Jonas (subcommittee chairman) presiding.

Also present: Hon. Thaddeus M. Machrowicz.

Appearances: Bruce Parkhill, Esq., for claimants; Dr. T. C. Byerly, animal husbandman, in charge, Animal Husbandry Division, Bureau of Animal Industry, Agriculture Research Administration, United States Department of Agriculture.

Mr. JONAS. The meeting will come to order. This is a special subcommittee meeting of the members of the subcommittee on claims of the Committee on the Judiciary to consider the following bills:

H. R. 846, introduced by Mr. Reed, of Illinois, for the relief of Henry J. Krueger;

H. R. 1568, introduced by Mrs. Church, of Illinois, for the relief of George Postma;

H. R. 2591, introduced by Mr. Greenwood, of New York, for the relief of the Kirsch Fur Farm, Inc.;

H. R. 2592, also introduced by Mr. Greenwood, for the relief of Frederick Kjaer;

H. R. 2776, introduced by Mr. Flood, for the relief of August Genetti; and

H. R. 2777, also introduced by Mr. Flood, for the relief of Frank Lobitz.

Without objection, copies of the respective bills will be inserted in the record at this point.

(H. R. 846, H. R. 1568, H. R. 2591, H. R. 2592, H. R. 2776, and H. R. 2777 are as follows:)

[H. R. 846, 82d Cong., 1st sess.]

A BILL For the relief of Henry J. Krueger

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Treasury be, and he is hereby, authorized and directed to pay, out of any money in the Treasury not otherwise appropriated, the sum of $55.591 to Henry J. Kruger, of Elgin, Illinois, in full settlement of all claims against the United States for damages sustained to mink as a result of using certain poultry waste upon the approval and recommendation of the United States Department of Agriculture from November 1949 through February 1950: *Provided*, That no part of the amount appropriated in this Act in excess of 10 per centum thereof shall be paid or delivered to or received by any agent or attorney on account of services rendered in connection

with this claim, and the same shall be unlawful, any contract to the contrary notwithstanding. Any person violating the provisions of this Act shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined in any sum not exceeding $1,000.

[H. R. 1568, 82d Cong., 1st sess.]

A BILL For the relief of George Postma

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Treasury be, and he is hereby, authorized and directed to pay, out of any money in the Treasury not otherwise appropriated, the sum of $62,974 to George Postma, of Elgin, Illinois, in full settlement of all claims against the United States for damages sustained to mink as a result of using certain poultry waste upon the approval and recommendation of the United States Department of Agriculture from November 1949 through February 1950: *Provided*, That no part of the amount appropriated in this Act in excess of 10 per centum thereof shall be paid or delivered to or received by any agent or attorney on account of services rendered in connection with this claim, and the same shall be unlawful, any contract to the contrary notwithstanding. Any person violating the provisions of this Act shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined in any sum not exceeding $1,000.

[H. R. 2591, 82d Cong., 1st sess.]

A BILL For the relief of Kirsch Fur Farm, Incorporated

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Treasury be, and he is hereby, authorized and directed to pay, out of any money in the Treasury not otherwise appropriated, the sum of $18,960 to Kirsch Fur Farm, Incorporated, of East Meadow, Hempstead, New York, in full settlement of all claims of the Kirsch Fur Farm, Incorporated, against the United States for damages sustained to mink as a result of using certain poultry waste upon the approval and recommendation of the United States Department of Agriculture from November 1948 through February 1949: *Provided*, That no part of the amount appropriated in this Act in excess of 10 per centum thereof shall be paid or delivered to or received by any agent or attorney on account of services rendered in connection with this claim, and the same shall be unlawful, any contract to the contrary notwithstanding. Any person violating the provisions of this Act shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined in any sum not exceeding $1,000.

[H. R. 2592, 82d Cong., 1st sess.]

A BILL For the relief of Frederick Kjaer

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Treasury be, and he is hereby, authorized and directed to pay, out of any money in the Treasury not otherwise appropriated, the sum of $9,088 to Frederick Kjaer, of Smithtown, New York, in full settlement of all claims of Frederick Kjaer against the United States for damages sustained to mink as a result of using certain poultry waste upon the approval and recommendation of the United States Department of Agriculture from November 1948 through February 1949: *Provided*, That no part of the amount appropriated in this Act in excess of 10 per centum thereof shall be paid or delivered to or received by any agent or attorney on account of services rendered in connection with this claim, and the same shall be unlawful, any contract to the contrary notwithstanding. Any person violating the provisions of this Act shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined in any sum not exceeding $1,000.

[H. R. 2776, 82d Cong., 1st sess.]

A BILL For the relief of August Genetti

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Treasury be, and he is hereby, authorized and directed to pay, out of any money in the Treasury not otherwise appropriated, the sum of $86,536 to August Genetti, of Sugar Loaf, Pennsylvania, in full settlement of all claims of August Genetti against the United States for damages sustained to mink as a result of using certain poultry waste upon the approval and recommendation of the United States Department of Agriculture from November 1949 through February 1950: *Provided*, That no part of the amount appropriated in this Act in excess of 10 per centum thereof shall be paid or delivered to or received by any agent or attorney on account of services rendered in connection with this claim, and the same shall be unlawful, any contract to the contrary notwithstanding. Any person violating the provisions of this Act shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined in any sum not exceeding $1,000.

[H. R. 2777, 82d Cong., 1st sess.]

A BILL For the relief of Frank Lobitz

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Treasury be, and he is hereby, authorized and directed to pay, out of any money in the Treasury not otherwise appropriated, the sum of $35,036.30 to Frank Lobitz, of Sugarloaf, Pennsylvania, in full settlement of all claims of Frank Lobitz against the United States for damages sustained to mink as a result of using certain poultry waste upon the approval and recommendation of the United States Department of Agriculture from November 1949 through February 1950: *Provided*, That no part of the amount appropriated in this Act in excess of 10 per centum thereof shall be paid or delivered to or received by any agent or attorney on account of services rendered in connection with this claim, and the same shall be unlawful, any contract to the contrary notwithstanding. Any person violating the provisions of this Act shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined in any sum not exceeding $1,000.

Mr. JONAS. It is understood by everybody that the proceedings here do not have the formality of a judicial hearing; this is a very informal proceeding. Everyone present here can relate their story in narrative form. Any person in the room is permitted to make known anything to add to the situation that we have here.

The lawyers may ask questions of the witnesses, but let us start off by trying to get all the facts. We want everyone to present any data they may have, and we don't want you to feel that you are being held down by judicial proceedings. I am sure we can get the facts involved in this particular issue.

For the purpose of developing the issues, we will specifically consider H. R. 846, a bill for the relief of Henry J. Krueger, of Elgin, Ill. He is asking the sum of $55,591 in full settlement of all claims against the United States for damages sustained to mink as a result of using certain poultry waste upon the approval and recommendation of the United States Department of Agriculture from November 1949 through February 1950.

In other words, the hearing will be on H. R. 846, which is the bill introduced by our colleague, Mr. Reed of Illinois, but these other bills are pending, and they are in substantially the same language, and the only difference is that they are in varying amounts.

It is understood that while we are taking testimony on Mr. Krueger's bill, H. R. 846, the testimony adduced in that hearing may

be taken as a determining factor in disposing of all these other bills, without going into all the details again.

Dr. BYERLY. That is all right with me, sir. We don't want to go through it more than once.

Mr. JONAS. Then we will assume that the factual testimony adduced on H. R. 846 will be the determining factor as it applies to all the other claims.

Dr. BYERLY. There is only one question, Mr. Jonas: Two of these bills refer to 1948–49, and the remainder refer to 1949–50. So the issue involved is practically the same in the details, the only difference being as to the period of time.

Mr. PARKHILL. I think, Mr. Chairman, that will be cleared up by our affidavits.

Mr. JONAS. We will let you, Mr. Parkhill, make your presentation first. Suppose you give us the complete story.

Mr. PARKHILL. If there is anything that Dr. Byerly wants that I don't have, may I have the privilege of supplying it later? I will be very happy to supply the information later.

Mr. JONAS. That will be all right.

Now, having had the bill introduced, it is for you to show a bona fide case.

Since Congressman Reed, the author of the Krueger bill, is present, perhaps he would like to make a statement at this time. Go right ahead, Congressman.

STATEMENT OF HON. CHAUNCEY W. REED, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Mr. REED. Mr. Chairman, I only will say a few words about it. Of course, I am the one who introduced the bill on behalf of Henry J. Krueger, who is a resident of Elgin, Ill., and a resident in the congressional district that I represent.

The chairman, of course, recognizes the fact that the introduction of this bill seems to be the only medium by which relief can be accorded to this constituent.

The fact is that the claim is against the sovereign, and that means, of course, that it must be done through the Congress, because there appears to be no court which he could go to, nor is there a branch or administrative agency of the Government to which he would have a right to go under existing law and seek compensation, and, so, this is his only recourse: to seek compensation here.

So, recognizing the fact that this committee, in considering the matters pointed out in this bill, and the evidence to be adduced during the hearing, will look at the matter, as the chairman has already stated, in a broad sense, and will consider matters of law and equity.

I am happy at this time to present Mr. Parkhill, who is the attorney representing Mr. Krueger, and he will make the argument as to the facts and the law and the equity and justice as he sees fit.

Mr. JONAS. Just one question, if you don't mind: The issues involved in this hearing do not come within the scope of the Tort Claims Act, do they?

Mr. REED. I understand it does not.

Mr. JONAS. How did you get around the fact that this claim was not filed in the United States Court of Claims?

Mr. PARKHILL. You are addressing me?

Mr. JONAS. Yes; I am just asking that question now.

Mr. PARKHILL. I have a brief on that subject, which I would like to submit to you, rather than to take the time to argue it orally.

Mr. JONAS. In other words, you have covered it in your brief, and you are prepared to meet the issue as we go along?

Mr. PARKHILL. Yes, sir.

Mr. JONAS. All right; you may proceed.

STATEMENT OF BRUCE PARKHILL, ESQ., CHICAGO, ILL.

Mr. PARKHILL. My name is Bruce Parkhill, and I live in Evanston; I am a lawyer and I practice with offices in Chicago. I practice before the Supreme Court of Illinois and the Federal courts of Illinois.

I would like to say, at the outset, that I am here purely in the capacity of personal attorney for Mr. Krueger. I represent no organization of any kind. I am not a lobbyist. I have no interest at all except to develop the facts in this case.

At the outset, I would like to say that I intend to present our case by means of affidavits and other exhibits, which I should like, however, to submit to you, and, perhaps, even read.

Perhaps there is no better time, Judge, to present the brief to which I have just referred, and, if I may, I will pass it up to you, if you want to glance at it.

Mr. JONAS. Do you want to have it marked for the record?

Mr. PARKHILL. This is the brief we are submitting on this case [handing document to chairman].

Mr. JONAS. It will be received in evidence and marked "exhibit No. 1."

(The document referred to was thereupon marked "Exhibit No. 1," received in evidence, and filed in the record.)

Mr. PARKHILL. This brief was prepared by Mr. Oliver M. Loomis, my associate. I am sorry he was taken ill just before I left, and apparently he will not be able to be here this morning.

Mr. JONAS. This particular bill, Mr. Parkhill, that we have before us, H. R. 846, involves the sum of $55,591; is that the correct amount?

Mr. PARKHILL. Mr. Chairman, I am going to have to amend that and cut it down about $500. I have the precise figure now. There had to be an estimate made, anticipating what the market would be.

Mr. JONAS. For the benefit of Mr. Byerly, of the Agriculture Department, could you give us an estimate of the total amount involved in all these claims?

Mr. LEE. I can give it to you in brief form: Six bills have been introduced, totaling a little more than $268,000. They are as follows:

H. R. 846—Henry J. Krueger	$55,591.00
H. R. 1568—George Postma	62,974.00
H. R. 2591—Kirsch Fur Farm, Inc	18,960.00
H. R. 2592—Frederick Kjaer	9,088.00
H. R. 2776—August Genetti	86,536.00
H. R. 2777—Frank Lobitz	35,036.30

Mr. JONAS. In other words, the Krueger bill, which is the one we are considering, represents a little more than one-fifth of the total amount of the claims filed thus far?

Mr. LEE. Yes, sir.

Mr. PARKHILL. Now, at the outset, I would like to offer in evidence certain statements in extracts from various Government reports, and explain, briefly, as I go along, their pertinence.

The first is the report of the agricultural experiment station for 1943. On the bottom of the first page there is a footnote, which reads:

Submitted in accordance with the requirement that the Secretary of Agriculture shall report to Congress on the work and expenditures of the State agricultural experiment stations established under the Hatch Act of 1887 and supplementary legislation.

That act of 1887 is the one under which the Federal Government subsidized State agricultural experiment stations in part, and it required that the Secretary of Agriculture report annually to the Congress the disposition of the funds and what the stations had done.

In this particular report, at page 56 it says, in part, as follows:

In trials at the California station, implantation of 20 three-week-old single-comb white Leghorn cockerels with stilbestrol pellets produced an increase of 43 grams at 8 weeks of age over that of 21 untreated controls. Changes in body composition were also induced. This finding, too, appears to have a practical application.

This is, in other words, one of the reports on the experimental work done under the auspices of the Department in developing this method of fattening chickens and poultry with this sex hormone.

Mr. JONAS. I was just going to ask you about the marking of these exhibits. Would it not be well to have them numbered? The brief that you just submitted will be marked exhibit 1, and from now on the reporter can mark the exhibits as they are presented.

This report on the experimental work in 1943 will be marked No. 2.

(The document referred to was thereupon marked "Exhibit No. 2," received in evidence, and made a part of the record.)

Mr. PARKHILL. As exhibit No. 3, I should like to introduce a part of a similar report for the year 1946, filed under the requirements of the same act of 1887. At page 28 it is stated:

Consumption of diethylstilbestrol at 0.70 to 1.55 milligrams per pound of feed improved the market grade and the rate of gain of many experimental lots of young cockerels of different ages in the Michigan station experiments. A definite antigonad effect was also observed. There appeared to be no advantage in continuing the feeding period beyond 6 weeks. The age of the birds when feeding was started had no noticeable effect on the influence of stilbestrol.

Mr. JONAS. It may be received in evidence.

(The document referred to was thereupon marked "Exhibit No. 3," received in evidence, and made a part of the record.)

Mr. PARKHILL. Exhibit No. 4 is experiment station record, volume 91, July–December 1944, issued and published by the Department of Agriculture, which, at page 673, reports on the oral administration of estrogens in poultry, and again refers to the use of diethylstilbestrol.

Mr. JONAS. In the contents of the document, does it go into details about the effect of diethylstilbestrol?

Mr. PARKHILL. In a brief way.

Mr. JONAS. Would that add anything to this particular question here?

Mr. PARKHILL. In a way. In the article, it says, in part:

In experiments on the effects of orally administered estrogens, the dimethyl-ether of diethylstilbestrol was the most potent and should be the most suitable for fattening. Treatment for 16 days with 20 milligrams increased the weight from 26 to 112 grams.

I am bringing this down to date, showing what has been published by the Department of Agriculture in developing this method of fattening poultry. That is the purpose of these exhibits.

(The document referred to was thereupon marked "Exhibit No. 4," received in evidence, and made a part of the record.)

Mr. PARKHILL. As exhibit No. 5, I submit for the record Experiment Station Record, volume 92, January–June 1945, where similar work is reported at page 836, where they state:

THE FATTENING ACTION OF ORALLY ADMINISTERED SYNTHETIC ESTROGENS AS COMPARED WITH DIETHYLSTILBESTROL PELLET IMPLANTS

F. W. Lorenz, University of California

(Poultry Science 24, 1945, No. 1, pp. 91–92)

The most pronounced fattening action of diethylstilbestrol was produced by implantation of one 20-25 milligram pellet of this compound in the neck region of 6-week-old single-comb white Leghorn cockerels. These cockerels produced an average of 26.6 grams of abdominal fat, yet this material given orally produced no additional fat, as compared with control birds which received no treatment. A moderate degree of fattening, 14.3 and 14.5 grams, occurred with the oral addition of 110 and 66 milligrams of diethylstilbestrol administered orally. Similar effects were obtained with 110 and 66 milligrams of hexesterol dimethylether given orally. The oral administration of the various synthetic estrogens is deemed decidedly inferior to subcutaneous implantation by Jaap and Thayer (Experiment Station Record, 91, p. 673).

Mr. JONAS. What period is involved in that report?

Mr. PARKHILL. January to June 1945.

Dr. BYERLY. It is a report of the work done in that period.

Mr. JONAS. What you have introduced thus far have been earlier?

Dr. BYERLY. One is earlier and one is actually later.

Mr. PARKHILL. The use of this drug was not authorized or passed upon until 1947, so all of this work I am referring to was previous to that time.

(The document referred to was thereupon marked "Exhibit No. 5," received in evidence, and made a part of the record.)

Mr. PARKHILL. My next exhibit, No. 6, will be a report from Experiment Station Records, volume 94, January–June 1946, and at page 367 it reports on the effect of feeding diethylstilbestrol to cockerels, and then, on page 368, it has a report on fattening chickens by feeding estrogens. The articles are as follows:

THE EFFECT OF FEEDING DIETHYLSTILBESTROL TO COCKERELS

J. F. Sykes, J. A. Davidson, and F. M. Barrett, Michigan Experiment Station, (Poultry Science, 24, 1945, No. 6, pp. 542–545)

In further study of the effect of diethylstilbestrol on fattening cockerels, as was made by Lorenz (E. S. R. 89, p. 245), three groups of birds were selected. One group consisted of 60 Rhode Island Red cockerels, 12 weeks of age. A second group, of 27 Barred Plymouth Rock cockerels, 12 weeks of age, and a third group of 27 Barred Plymouth Rocks 5 weeks of age.

The Rhode Island Reds were divided into five groups at 12 weeks, two of which were killed at 24 weeks of age, and three at 16 weeks of age. Two of these received stilbestrol with bile salts, whereas another received stilbestrol only. The 27 Barred Plymouth Rock chicks of the two ages were divided into three groups, with one group of controls, one receiving stilbestrol only, and a group in each case receiving stilbestrol and bile salts. Consumption of diethylstilbestrol from 0.70 to 1.55 milligrams per pound of feed improved the market grade and the rate of gain of many of the experimental lots. A definite antigonad effect was also observed. There appeared to be no advantage in con-

tinuing the feeding period beyond 6 weeks. The age of the birds when feeding was started had no noticeable effect on the influence of stilbestrol. Addition of bile salts had no effect on its utilization.

FATTENING CHICKENS BY FEEDING ESTROGENS

R. H. Thayer, R. H. Jaap, and R. Tenquite, Oklahoma Experiment Station (Poultry Science 24, 1945, No. 6, pp. 483–495)

Inclusion of estrogens (diethylstilbestrol and its dianisylhexane) in the fattening rations was studied with 1,141 growing chickens of both sexes and 60 mature * * *. The addition of the estrogens to the feed caused fat to be rapidly deposited in the body. There was superiority in the skin texture and distribution of the fat ordinarily observed in birds of similar age and sex. The estrogens were more potent in oil solutions mixed with the feed than when fed in tablet form. The more favorable fattening with the estrogens was accompanied by a slight increase in feed consumption. Estrogen feeding suppressed maleness, and most of the body changes associated with egg production * * * were produced in both sexes as result of this feeding. The dimethylether of diethylstilbestrol (3.4-dianisylhexane-3), proved more efficient for fattening than the original estrogen product. The levels of the estrogens used for fattening were 0, 20, 40, 60, 80, and 100 milligrams of dianisylhexane per pound of feed. The optimum level of estrogens for a 3- to 4-week fattening period was about 40–50 milligrams per pound of feed. There was much improvement in fatness when the fattening period was reduced to 2 weeks. Growth rate was unaffected by estrogen feeding. Excessive doses of dianisylhexane produced physical disability due to lipemia and in a few instances death. Fragile leg and wing bones were noted in some chicks fattened with this material.

(The document referred to was thereupon marked "Exhibit No. 6," received in evidence, and made a part of the record.)

Mr. PARKHILL. There is one more on this point, Mr. Chairman, that I submit as exhibit No. 7; it is a copy of a printed publication entitled "Experiment Station Record, Volume 95, July–December 1946." In this record, similar experiments are reported at pages 46, 47, 190, 234, 499, and 709. All of those experiments were reported by the Department of Agriculture in that one volume.

The excerpts are as follows:

RAPID ASSAYS TO DETERMINE THE FATTENING POTENCY OF ORALLY ADMINISTERED ESTROGENS IN BIRDS

R. G. Jaap

* * * In the chick ovaduct test * * * baby chicks were fed estrogenized feed for 16 days after hatching and were killed on the 17th day, after which the ovaducts were weighed and found to correlate closely with actual fattening trials. The feather cover test was made with a mature brown Leghorn cockerel or capon. The black breast feathers were plucked and the estrogen administered during growth of the new feathers. The growing part of these feathers became salmon colored. The width of the salmon bar demonstrated the length of time the body had been under the influence of the estrogen. The weight was determined on young chicks after feeding estrogen, and the androgen stimulation on comb size was suppressed in carrying out the comb test.

CAPONS PRODUCED BY THE USE OF SYNTHETIC ESTROGEN (STILBESTROL)

D. J. G. Black and R. G. Booth

* * * Changes simulating caponizing were produced in 17-week old cockerels by feeding 1 to 1.5 milligrams of stilbestrol per day. The utilization of feed was improved by estrogen feeding to birds. However, optimal results were not obtained.

ACTIVITY OF SYNTHETIC ESTROGENS ON ORAL ADMINISTRATION IN DOMESTIC FOWL AND TURKEY

R. G. Jaap

* * * Seventeen synthetic estrogens have been tested for oral administration in domestic fowl and turkey. All but two of these may be considered as derivatives of stilbene. * * * As levels of 20 or more milligrams per pound of feed, the dimethylether of diethylstilbestrol was the most potent estrogen for oral administration in both species. * * *

EFFECTS OF THIOURACIAL, DESICCATED THYROIDS AND STILBESTROL DERIVATIVES ON VARIOUS GLANDS, BODY WEIGHT, AND DRESSING APPEARANCE IN THE CHICKEN

E. W. Glazener and M. A. Jull

* * * In feeding trials with a total of 280 chicks, including pure bred and cross bred barred Plymouth Rocks, New Hampshires * * *

On the basis of dressing and fleshing appearance, the lot of birds fed diethylstilbestrol for a 3-week period at a level of approximately 30 milligrams per day gave the best dressing appearance of any in the lot. Early limited feeding followed by full feeding for the last 3 weeks seemed to improve the dressing appearance of the carcasses. Dimethylether of diethylstilbestrol fed for a 2-week period at the level of 50 milligrams per pound of feed did not appear to improve finish, affect appetite, or improve the weight of the birds over the controls under the conditions. * * *

(The document referred to was thereupon marked "Exhibit No. 7," received in evidence, and made a part of the record.)

Mr. PARKHILL. Now, I should like, if I may, to refer briefly to certain articles in the scientific literature, having to do with the power of this drug and its effect in general.

I have, in the written brief that was previously filed with the committee, for instance, referred to the instance reported by the American Medical Association Journal, in which a sex criminal who had abnormally large genitals was treated with this drug, with the consequence that his genitals shrunk to about two-thirds of their previous size, and his breasts developed.

I also refer to a case in England——

Mr. JONAS. For the record, when you refer to such illustrations, is there any way that we can connect it up by date and time?

Mr. PARKHILL. I am referring to an article by Charles William Dunn, entitled "Stilbestrol-Induced Gynecomastia in the Male," published in the Journal of the American Medical Association, Chicago, in 1940, volume 115, at page 2263.

Then, there is a case reported in England of a girl 5 years of age who had been hairless since having had the chickenpox at the age of 1. In an attempt to get her hair to grow, they took this drug in ointment form and rubbed it into the scalp. Not only did her hair grow, but her eyebrows and eyelashes grew. So did her breasts. And she started vaginal bleeding 10 weeks after she started using the ointment, and that bleeding continued for 4 weeks. That case was reported by C. H. Whittle and A. Lyell in an article entitled "Precocity in a Girl Aged Five Due to Stilbestrol Inunction," reported in the proceedings of the Royal Society of Medicine, London, 1948, volume 41, at page 760.

Most pertinent, I think, although we are interested in mink, this is a case reported by M. Patricia Fitzsimmons in an article entitled "Gynaecomastia in Stilbestrol Workers," reported in the British

Journal of Industrial Medicine, volume 1, at page 235, London, 1944.

In that case there were 38 men working in the manufacture of this drug, and in the course of that work they had absorbed very small quantities of it either through breathing it in through the air, or through the skin. Of the 38 men, 20 of them had developed enlarged and sensitized breasts from exposure to these small amounts of the drug.

The reason that this instance is of particular interest is that out of the 20 men so affected, only 2 recovered. In other words, there were residual evidences of the effect of this drug that were permanent.

While we are speaking of the effect upon human beings, I believe it is rather generally recognized that small quantities of this drug can cause a cystic ovary in a woman, sterilizing her. In the case of a man on the border line, periodically taking small quantities of this drug may mean the difference between his capacity to breed and his lack of capacity to breed, and, finally, a small quantity, taken from time to time by children in the growing stage, it will inhibit their skeletal growth. On this latter point, I would want to refer you to an article by two doctors from Yale University Medical School, Dr. W. M. Gardner and Carroll S. Pfeiffer, who recorded their findings in an article entitled "Influence of Estrogens and Androgens on the Skeletal System," appearing in the Physiological Review, April 1943, volume 23, No. 2, page 139, published at Baltimore, Md.

Mr. JONAS. Is that incorporating the illustration you gave from the article?

Mr. PARKHILL. It does, Congressman.

Mr. JONAS. Have you any supporting evidence to substantiate the statements you have made in regard to these other cases?

Mr. PARKHILL. I do not have it with me. No; I think that that would have to be developed by other testimony, later.

I might say my source of information was Dr. Enders, and also a man I talked to in Foods and Drugs, and I have also had two doctors tell me about it.

Now, there has been some work done. The first, I believe, was by some gentlemen in Canada. More recently, a man by the name of R. S. Gowe. As I recall, he is up in New Jersey. I am not sure of that. I understand he did a little work, testing to see the extent that there were residual estrogens in the tissues of fowl treated with diethylstilbestrol. In the case of stilbestrol they found in both instances there was a storage of the drug in the flesh of the bird. I believe Gowe found it was to the extent of about 0.08 of a milligram.

The minimal therapeutic dose used by doctors when they treat human beings with this drug is 0.1 milligram, which is only a little more than the amount that is stored in a pound of flesh of the fowl.

There is an article by John Ralph and Miriam F. Menkin entitled "Stilbestrol," that appeared in the New England Journal of Medicine, Boston, 1942, volume 227, at page 552, in which they say, at page 555:

> For dysmenorrhea, a very common gynecologic disorder, estrogens, stilbestrol among them, have a very limited field, because, to relieve the pain, they must prevent ovulation. Thus, to upset what is frequently a delicately balanced mechanism in any girl, is usually too high a price to pay.
>
> The standard daily dose is considered to be 0.1 to 1 milligram, although some patients profitably take as much as 5 milligrams.

Then, Beverly C. Compton and Roland E. Bieren wrote an article entitled "Diethylstilbestrol," which appeared in the Bulletin of the School of Medicine of the University of Maryland, volume 26, page 130, published in Baltimore in 1941, wherein they state:

> Stilbestrol also affects the male generative organs and produces definite and often permanent damage to the testes.

They also state that the consensus is the optimum dose is from one-half to 1 milligram per day.

Then. Bernard Seligman published an article, Hepatitis Following Use of Diethylstilbestrol, in the Urologic and Cutaneous Review, volume 48, page 319, printed at West Palm Beach, Fla., in 1944: he states, at page 320:

> Some authors feel that estrogens may aggravate breast cancers. Others also advise against the use of estrogens in females who have the possibility of breast cancer present in their history.

Henry M. Lee, E. B. Robbins, and K. K. Chen prepared an article on The Potency of Stilbestrol in the Immature Female Rat, which was published in Endrocrinology, volume 30, page 469, printed at Menasha, Wis., in 1942. They found that this drug, stilbestrol, is 12 times as active as the natural hormone, estrone, when the drug is given orally; when it is given subcutaneously, as, of course, it is done in the case of chickens, it is 32 times as active as the natural hormone.

Now, I have spoken of the residuum of the drug in the flesh of the fowl, but, of course, in this case here, we are dealing not only with that but with something even far more serious.

The practice, as we will show a little later, is to inject the 15 milligram pellet up at the base of the head. At least, that is what they are supposed to do. And it was, of course, the chicken heads that were fed to the mink on Mr. Krueger's farm.

Mr. JONAS. When you say it is injected in the head of the chicken, whereabouts.

Mr. PARKHILL. In the neck, at the base of the head.

Mr. JONAS. Is it done hypodermically?

Mr. PARKHILL. Yes. I will introduce, a little later, a brochure which shows how it is done. I could do it at this time, but I have everything sorted out. I will do it later, if you don't mind.

As I say, this is a 15-milligram pellet that is stuck into the neck there.

Mr. F. W. Lorenz is one of the men who did some of the experimentation on this fattening of poultry with the drug. In reporting on some of his experiments, in Poultry Science, published at State College, Pa., in 1943, in volume 22, at page 190, Mr. Lorenz says, in writing an article on Fattening Cockerel by Stilbestrol Administration, he reported there that during the fattening period about one-half of the pellet remains as a residue at the seat of the injection, so that when the poultry is killed there is still a substantial dosage of this drug present in the form of the remainder of the pellet, right there at the seat, and, of course, any mink eating the chicken head with that pellet in it is going to get a very substantial dosage, when they consider one-tenth of a milligram is a therapeutic dose and 1 milligram is a large dose for a human being, so you can imagine what it would be for a mink.

Now, I would like, at this time, if I may, to introduce into evidence a report of the Department of Agriculture on the bill—I believe it was H. R. 9407—introduced at the last session. I have a copy that was sent me by the Congressman. I suppose there is a copy of that in the file of the committee. This is a copy of the report of the Department of Agriculture.

Mr. JONAS. We will make it part of the record.

Mr. PARKHILL. I would like, however, to read just two very short statements from it, in connection with what we are talking about, and I am quoting:

When administered to male chickens the drug suppresses masculine traits and increases fatness and carcass desirability. A pellet containing not more than 15 milligrams of diethylstilbestrol is administered by subcutaneous implantation in the nuchal region of the chicken. The pellet residue, which is removed with the head, may contain 1 to 5 milligrams of the drug.

* * * * * * *

During 1949 field observations made by employees of the Bureau of Animal Industry of several scattered cases of breeding failure in mink led them to suspect that caponette heads were present in poultry offal fed and that the cause of breeding failure might be residual diethylstilbestrol, because experiments which the Bureau had been conducting with diethylstilbestrol to induce mating of reluctant breeding minks showed that 3 milligrams of the drug interfered with the production of mink kits. Field examinations of poultry offal were made which disclosed several cases in which some caponette heads had been fed. Microscopic sections of ovaries of mink fed such material showed considerable disturbance of normal conditions.

As a matter of fact, the experiments to which the report refers were reported by Dr. Robert K. Enders in the Anatomical Record, 1948, volume 100, at page 738.

There is also some reference to that in my next exhibit: "The report of the Administrator of Agricultural Research, 1947—well, at page 98, the experimentation is described. The article is as follows:

PHYSIOLOGY OF REPRODUCTION IN FUR ANIMALS

Results of cooperative studies on the physiology of reproduction in fur animals at Swarthmore College, Swarthmore, Pa., indicate that breeding mink, 7 or 8 days after their first mating, stimulate their second ovulation, and additional eggs are fertilized, resulting in larger litters.

Stilbestrol was used on both foxes and mink. Injections were made on vixens showing silent heat. The response of the vulva was intense and immediate, but no vigorous males were present to test the females for mating behavior. An ovariectomized mink was injected with stilbestrol during the breeding season. This induced "chuckling," greater hypertrophy of the vulva, and a marked breeding behavior. Females would permit mating attempts for as long as an hour. Normal females that had refused to mate, mated readily when injected with stilbestrol, but produced no young.

(The document referred to was thereupon marked "Exhibit No. 8," received in evidence, and made a part of the record.)

Mr. PARKHILL. The next exhibit that I should like to introduce I am introducing for the purpose of the privilege of quoting the gentleman sitting on my left, Dr. Byerly, and that is an extract from an article by Dr. Byerly in the Yearbook of Agriculture, 1943–47, Science in Farming. That was published, of course, in 1947. The last paragraph of Dr. Byerly's article reads as follows:

Several chemicals have been found to act similarly to the female hormone. At the Oklahoma experiment station it was learned that certain of these chemicals added to the feed for a few days caused males, even old cocks, to assume characteristics of the capon, such as plump, soft flesh. We must postpone prac-

tical application of these results until we have removed the remotest possibility that the flesh of such treated birds, when eaten by men, will have a feminizing effect on them.

That will be No. 9.

(The document referred to was thereupon marked "Exhibit No. 9," received in evidence, and made a part of the record.)

As a matter of fact, it was in the same year, 1947, that the Department of Agriculture passed the practice. It was the Pure Food and Drug Administration, I think. In all fairness, I should say—I am only reporting what they told me, and they can perhaps speak better for themselves—but in fairness to themselves, they passed the procedure of the use of the drugs in this way with, I believe, great reluctance, but because they felt that their authority was limited under the terms of the law and that they were without authority to prohibit it under the circumstances, but I think they have still considerable misgiving, but we will let them speak on that, if they appear.

Now, in the same year, 1947, the same question came up in Canada, and my next exhibit is an extract from the Canada Gazette, part II, Wednesday, December 10, 1947, being an amendment to the Food and Drugs Act of Canada, which reads, in part, as follows:

Whereas the Minister of National Health and Welfare reports that it has been found that the administration of oestrogenic preparations to poultry for the purpose of fattening and tenderizing the flesh has produced results injurious to persons consuming poultry so treated; and

That it is, therefore, considered desirable that a regulation be passed under the authority of the Food and Drugs Act to prohibit the sale of the flesh or meat so treated and to prohibit the sale of oestrogenic compounds for administration to poultry intended for human consumption;

Therefore, His Excellency, the Governor General, in council, on the recommendation of the Minister of National Health and Welfare, is pleased to amend the regulations under the Food and Drugs Act, established by orders in council P. C. 9056, of 6th October 1942, and they are hereby further amended by adding to part D of section X, paragraphs 1a and 1b thereof, the following:

No person shall sell, offer for sale, or expose for sale, for consumption as food, poultry to which has been administered any preparation having oestrogenic activity.

1. B. No person shall sell, offer for sale, or expose for sale, for administration to poultry which may be consumed as food, any substance having oestrogenic activity.

It is signed by A. D. P. Heeney, clerk of the Privy Council.

That will be exhibit 10.

(The document referred to was thereupon marked "Exhibit No. 10," received in evidence, and made a part of the record.)

Mr. JONAS. You are reading that as an excerpt from the Canada Gazette.

Mr. PARKHILL. Yes, this is an extract from the Canada Gazette, part II, Wednesday, December 10, 1947.

Now, I have with me the complete Food and Drugs Act and regulations of Canada, in which the same regulations are found, under numbers B–24.013 and B–24.014.

I also have the Canada Gazette setting forth the same regulations, published May 24, 1950, and I have a certificate of Robert M. Collin, legal adviser of the Department of National Health and Welfare, at Ottawa, Ontario, certifying that these regulations are still in force in Canada. I think that statement would not be challenged, and, if someone does not require it, I think it is fully covered by the extract that I put in the record.

Mr. JONAS. Have you any objection?

Dr. BYERLY. No.

Mr. JONAS. We can assume, then, that the documents to which you refer are authentic documents, for the purpose of the record.

Dr. BYERLY. Yes.

Mr. JONAS. Very well.

Mr. PARKHILL. Now, as I said, this amendment was passed and became law in 1947.

This is borne out, incidentally, by the Department of Agriculture in its report on H. R. 9407, which is already in evidence.

In the Report on the Agricultural Experiment Station, 1948, the following year, the Agriculture Department had this to say in regard to this same material or substance:

> The Missouri station has been a fertile source of information on many of these hormone-like materials Studies on the ovary have resulted in the production of estrogens and estrogen-like materials, and their practical and profitable use with various classes of fattening livestock has been demonstrated in Missouri, Indiana, Oklahoma, and other stations. A real problem is now presented, however, in that it still remains to be shown whether or not harmful effects may follow the consumption of meat from the animals so fed.

I offer this as exhibit 11.

(The document referred to was thereupon marked "Exhibit No. 11," received in evidence, and made a part of the record.)

Mr. PARKHILL. I think that that clearly shows that the Department of Agriculture, quite understandably, was concerned about the dangers even from eating the flesh of these treated fowls, and even a year after the procedure had been passed and permitted.

The Department certainly knew that in the chicken head there was a residuum of this drug. It was in the literature, and I assume it was in their reports, where they acknowledged the fact that they had knowledge at that time.

Nonetheless, in 1948 they began advising the mink ranchers to feed chicken waste and at no time told the ranchers, who admittedly had no way of knowing about this practice we have been discussing. They never told them at any time to watch out for doped poultry and that the chicken heads had a residuum of this drug, this hormone.

For instance, in the Report of the Administrator of Agricultural Research for 1948, there is a report on the experimentation done by the Department on the use of chicken waste. The article reads as follows:

> USE OF POULTRY WASTE IN THE MINK DIET
>
> Raw poultry waste, consisting primarily of the heads, feet, and entrails of chickens, fed to weaned mink kits as 35 percent of their diet from 49 days of age to pelting, produced more rapid growth than an equal proportion of horse meat. A combination of 17.5 percent raw poultry waste and 17.5 percent horse meat ranged between the ingredients fed separately for promoting growth. By late November there were only slight differences in the average weight of mink given the three diets. Of 14 pelts, 4 from the group fed 35 percent poultry waste were graded as "pullers"—i. e., those in which the guard hair come out when pulled. The remaining 10, however, were normal and comparable in value to pelts from mink fed horse meat. Additional work will be required to determine whether any correlation exists between the feeding of poultry waste and the appearance of pelts with loose guard hair. Raw poultry waste proved to be fully as satisfactory as horse meat for the maintenance of adult mink during the summer and fall.

(The document referred to was thereupon marked "Exhibit No. 12," received in evidence, and made a part of the record.)

Mr. JONAS. Mr. Parkhill, is it your suggestion that in the minute detailed research you have been developing here there is nothing to be found on record in the form of a caution or any other method of warning the public with reference to the application of this drug?

Mr. PARKHILL. I know of nothing issued by the Department of Agriculture previous to February 1950.

Mr. JONAS. There ultimately was warning issued?

Mr. PARKHILL. Yes; but by that time it was too late.

Mr. JONAS. However, there was ultimately a warning issued.

Mr. PARKHILL. I will develop it in the history. I am sorry I have to do it in this laborious way.

Mr. JONAS. There was a warning issued, but when it came——

Mr. PARKHILL (interposing). As a result of what happened to us.

Mr. JONAS. That was subsequent to the period when you maintain the damage had been done to your animals?

Mr. PARKHILL. That is correct. We will show that clearly.

Now, I would also like to introduce extracts from the report of the Administrator of Agricultural Research for the years 1943 and 1944. I think the purpose of this will be clear when I state that in the 1943 report the research administration points out that it was established for the purpose of unifying the research programs of the Department of Agriculture and concentrate on the work more effectively. In that report they stated:

> The Agricultural Research Administration was created December 13, 1941, by Secretary Claude R. Wickard, in a reorganization of the Department of Agriculture. Eight research bureaus and agencies were combined under the direction of an Agricultural Research Administrator. This grouping under one administrative head of the greater part of the scientific work of the Department was for the purpose of unifying the research program and concentrating efforts more effectively. The agencies included in the Agricultural Research Administration were the Bureau of Animal Industry, Dairy Industry, Plant Industry, Agricultural Chemistry and Engineering, Entomology and Plant Quarantine, Home Economics, the Office of Experiment Stations, and the Beltsville Research Center. By Executive Order 9069, issued February 23, 1942, the President confirmed the reorganization.
>
> The Secretary, on January 12, 1942, authorized and directed the Agricultural Research Administrator to obtain from all agencies of the Department, including those not in the Research Administration, pertinent information concerning current and contemplated research activities, to advise the heads of departmental agencies concerning research plans and programs, and to make reports and recommendations to the Secretary regarding the research activities, plans, and programs of the several agencies of the Department.
>
> The number of research projects carried on in the Research Administration's laboratories, pilot plants, test plots, greenhouses, and field stations all over the country is immense. The range of sciences includes chemistry, physics, bacteriology, plant and animal physiology and pathology, genetics, nutrition, entomology, agronomy, engineering, and other disciplines and subdivisions. The emphasis at present is on problems connected with the war, but many of the results achieved in the past have contributed to the rapid solution of wartime problems, and many of the projects begun for war objectives—sometimes at the request of military authorities—will be of immense value to agriculture after the war. Of great importance has been the reservoir of accumulated knowledge made available by the pooling of scientific resources in the Department. A great deal of the work is carried on in cooperation with State agricultural experiment stations and other research and educational institutions.

The substance of that statement is that the Agricultural Research Administration was created for the purpose of correlating all the experimental work and all the scientific knowledge of the Department.

(The document referred to was thereupon marked "Exhibit No. 13," received in evidence, and made a part of the record.)

Mr. PARKHILL. In the 1944 report, however, among other things, they have this to say:

THE RESEARCH ADMINISTRATION

The advances made in agricultural science in recent years are written in the production of our farms during this war.

The remarkable fact is that total annual production in 1942 and 1943 has been almost half again as much as it was in 1917–18, on about the same amount of land, and with some 4,000,000 fewer people on our farms.

Previous production records for various major crops and products have been broken again and again. * * *

The net result of these and many other developments has been that our Armed Forces can feed millions of men and stockpile great quantities of food while, at the same time, we are making large shipments to our allies and keeping our civilian population not less well—perhaps even a little better—nourished than it was in the years immediately before the war.

What makes these achievements possible?

Will, work, weather, planning, and prices, each play an important part. But all of them together would not be enough. The final decisive factor is scientific knowledge.

Like American industrial workers, American farmers are technology-minded. During this war they have been especially alert to learn and use scientific practices; and agricultural science has made much progress since the last war. Better varieties of crops, better soil management, more and better fertilizers, better animals, improved methods of controlling diseases and insects, mechanization—these advances account for a considerable proportion of our increased production per man and per acre.

In this respect, agriculture and industry are alike. If we want faster airplanes or more productive cows, we have to depend on research to find out how to get them.

Industry has its own research laboratories. The farmer's research agencies are, for the most part, the Department of Agriculture and the State experiment stations. He depends on them to anticipate and solve his scientific problems and to keep him up to date on scientific developments relating to his work. The countless experiments these agencies have conducted over many years have equipped him with materials and knowledge without which he could not have met the staggering demands of this greatest of all wars.

* * * * * * *

CLOSER COORDINATION OF RESEARCH ACHIEVED

In research for war it is vital to get results as quickly as possible, eliminate time-consuming delays and duplication, and make the available scientific personnel and equipment stretch as far as possible, all of which means close coordination and cooperation in a vast, complicated field of work. This close coordination and cooperation was assured when the Secretary of Agriculture in December 1941 brought seven of the Department's scientific bureaus together into one agency, the Agricultural Research Administration.

Thus, much of the research work of the Department and the accompanying measures for the control of diseases, parasites, and insects is now combined in a single organization, which also includes the administrative unit responsible for cooperative arrangements with the experiment stations in the States and Territories. This research work covers almost the entire range of agricultural production and the use of agricultural products in industry and in the home. The Plant Quarantine; Human Nutrition and Home Economics; Plant Industry, try; Agricultural and Industrial Chemistry; Dairy Industry; Entomology and Plant Quarantine; Human Nutrition and Home Economics; Plant Industry, Soils, and Agricultural Engineering; and the Office of Experiment Stations. The experiment station at Beltsville, Md., near Washington—known as the Beltsville Research Center—is operated as a service unit by the Agricultural Research Administration for the use of its bureaus and of other agencies in the Department.

Mr. JONAS. What is the name of the Administrator of Agricultural Research?

Mr. PARKHILL. Now, since I have only an extract here, I shall ask Dr. Byerly to help me out.

Dr. BYERLY. What is the date? The reason I ask, there have been four successive administrators, at that time, I think, it was E. C. Auchter—at that time.

Mr. PARKHILL. This will be exhibit No. 14.

(The document referred to was thereupon marked "Exhibit No. 14," received in evidence, and made a part of the record.)

Mr. PARKHILL. I submit certainly in view of that admission of the Department and its research head that any contention by the Department of Agriculture that Mr. Krueger did not have a right to depend upon the scientific knowledge that they published and the advice that they published, is out the window.

The Department has assumed and encouraged the very function that is described in this report.

Then, in September 1948, the Department of Agriculture published Circular No. 801, on Mink Raising; on page 19 it reports:

> Chicken or turkey heads (with beaks chopped off) and entrails make good mink feed; also jack rabbit and muskrat carcasses (during trapping season) are good. This material should be fresh and handled in a sanitary manner.

You can read this report from end to end and you will find no warning at all of this drug and the danger from it. All it says is that the material should be clean and handled in a sanitary manner.

This circular was prepared by Charles E. Kellogg, acting in charge of fur-farming investigation, Beltsville, Md.; Charles F. Bassett, Director of the Fur Animal Experiment Station, Saratoga Springs, N. Y.; and Dr. Robert K. Enders, in charge of investigation on fur animals, Swarthmore College, Swarthmore, Pa. And all are in the Animal Husbandry Division, Bureau of Animal Industry, Agricultural Research Administration.

(The document referred to was thereupon marked "Exhibit No. 15," received in evidence, and made a part of the record.)

Mr. PARKHILL. In September of that year, there was also published an article in the National Fur News, and it was reprinted in the American Fur Breeder for November 1948, and in that American Fur Breeder for November 1948—I happen to have the American Fur Breeder issue because that is the one which Mr. Krueger saw—in fact, this is his own personal copy.

This article is by agents of the Department of Agriculture and it is entitled "The Comparative Value of Poultry Waste and Horsemeat for Feeding Mink" by Charles Bassett and Ford Wilke, United States Fur Animal Experiment Station, Saratoga, Springs, N. Y.

I wonder, Dr. Byerly, do you have a copy of the authorization for the publication of this article?

Dr. BYERLY. Mr. Voorhees called for the letter of authorization and I assume it is in this file I have here. I can check it [checking file].

Mr. PARKHILL. The introduction and summary of this article reads as follows:

> Poultry waste is rapidly assuming a position of importance as a diet ingredient in the feeding of ranch-raised mink. Within the past 2 years many mink ranches have begun using it as a substitute for horse meat in their ration. For various reasons horse meat, which has long been the standby for ranches, is becoming a

scarce and expensive product. The amount of poultry waste available for use in mink feed, on the other hand, should increase in amount in the years to come, since the amount of poultry marketed in recent years, barring minor fluctuations has increased rather than declined in both numbers and total weight. The total weight of heads, feet, and entrails accumulating at a modern poultry-dressing plant in a single day represents a vast amount of food if it is all utilized.

This material is comparatively easy to procure in most localities, and is inexpensive, often being obtained merely for the labor of hauling, since dressing-plant operators are generally glad to dispose of it. Furthermore, it is a palatable feed for mink.

Morris (1946) found that the composition and biological value of a blend of poultry viscera, feet and heads, compared favorably with horse meat for feeding dogs, and concluded that this product could be fed in the same proportion as horse meat when used as a substitute.

Hartsough (1946) reported on feeding tests in which poultry waste used as a complete and as a 50 percent replacement for horse meat in mink diets maintained the health of the animals and gave production equal to that of the control animals.

Because the poultry waste used in the experiments cited above had been cooked, two feeding trials were conducted during the summer and fall of 1947 to ascertain how raw poultry waste compared in feeding value with horse meat for both growing and adult mink.

The poultry waste used in this experiment was obtained from a local concern, and consisted of the heads, feet, and entrails of freshly dressed chickens. The gizzard linings and their contents, plus any celluloid or metal leg bands, were sorted out and removed prior to grinding.

* * * * * * *

SUMMARIZATION

Preliminary feeding tests with kit and adult mink during the summer and fall have indicated that poultry waste consisting primarily of the heads, feet, and entrails of chickens obtained fresh from local dressing plants can be satisfactorily used either as a partial or complete substitute for horsemeat. It is relatively easy to obtain, and under ordinary circumstances very inexpensive.

Its use in the diet of the young mink will result in good food consumption because of its palatability. It has proved to be an excellent diet ingredient in stepping up the growth rate of kits from 49 to 112 days. When judged by fur experts in New York City, the pelts, with the exception of four undesirables which were graded as "pullers" were as desirable as those produced on diets in which horse meat alone was used.

In the diet of adult mink, chicken waste proved to be fully as satisfactory as horse meat.

We believe it is advisable to exercise great care in the handling of poultry waste. In order to avoid possible losses from food poisoning, this material should be procured while fresh, immediately processed, properly refrigerated, and thawed just prior to its use.

Again there is no warning or mention of diethylstilbestrol or hormones or any danger from that source.

Mr. JONAS. Dr. Byerly, Mr. Parkhill has handed you an article. Will you find the authorization in your file, if you have it?

Mr. PARKHILL. Can it go in at this time?

Dr. BYERLY. This is an office memorandum from Thomas H. Bartilson, acting in charge, Animal Husbandry Division, to B. T. Simms, Chief, Bureau of Animal Industry, and the subject is "Approval of attached manuscript" and it states:

Approval is requested of the attached manuscript entitled "The Comparative Value of Poultry Waste and Horsemeat for Feeding Mink," by Charles F. Bassett and Ford Wilke, United States Fur Animal Experiment Station, Saratoga Springs, N. Y., for outside publication.

THOMAS H. BARTILSON.

And that is approved by B. T. Simms, Chief, Bureau of Animal Industry, under date of June 15, 1948.

Mr. PARKHILL. I would like to have the office memorandum marked "Exhibit No. 16," the November 1948 issue of the American Fur Breeder marked "Exhibit No. 17."

(The memorandum and magazine were marked "Exhibits Nos. 16 and 17," respectively, and received in evidence and made a part of this record. See pp. 136, 139.)

Mr. PARKHILL. Again, in July 1949, in the National Fur News there was an article, Practical Economie in Feeding Mink Kits, by Charles F. Bassett, Director, United States Fur Animal Experiment Station, Bureau of Animal Industry, Agricultural Research Administration, Saratoga Springs, N. Y.

Again the feeding of chicken waste to mink is recommended without any warning whatsoever. It has this to say and I think this pertinent and I would like to read it. It is quite short:

> Our standard price for old horses at the station for many years has been $5. Now, with dog and cat companies bidding against one another for old horses and paying from $30 to $40 each at auction, the mink farmer in our region must pay at least those prices if he is to obtain any of the product. What can he use in place of horsemeat? What is available at prices he can afford?
>
> One product, formerly thrown out, concerning which you have probably heard a great deal, and which appeared to hold great promise, is poultry waste. This consists primarily of the head, feet, and entrails of chickens, although the heads and necks, as well as the entrails of turkey are also very desirable for feeding mink.
>
> One year's work with growing kits has shown that poultry waste gave a faster initial growth than horsemeat when these two products each constituted 35 percent of the diet. Just prior to pelting, there was no significant difference between the groups in average weight or in quality of pelt produced. A complete report of this experiment, including the safeguard that must be observed in feeding the product, was published in the Canadian and American fur farming magazines last summer and fall.
>
> In addition to poultry waste, tripe and canned fish have been tested as partial substitutes for horsemeat and have proved satisfactory, as you undoubtedly know from your own experience. Lungs, udders, spleens, beef and horse intestines, gullets and similar visceral products have not been tested experimentally on mink at the station, but the practical feeder knows that they can be used at times in small amounts without harm to the mink.

Dr. Byerly has now produced the office memorandum covering "Editor review and approval," a paper by Charles F. Bassett on "Practical economie in feeding mink kits."

I would like to have the office memorandum marked "18," the comments on manuscript "Practical economie in feeding mink kits" of May 23, 1949, marked "18 (a)" and the National Fur News of July 1949, containing the published article "Exhibit No. 19."

(The papers above referred to were marked "Exhibits Nos. 18, 18 (a), and 19," respectively, and were received in evidence and made a part of this record. See article on p. 139.)

I will later present an affidavit of Mr. Kjaer and attached to that affidavit are three letters, or rather copies of letters from men in the Department of Agriculture. Mr. Kjaer did not retain his own letter when he wrote the Department and Dr. Byerly said he would submit a copy of that letter when it arrives.

Dr. BYERLY. You say there were three letters?

Mr. PARKHILL. Yes. There was one from S. I. Fladness, Acting Chief of the Bureau of Animal Industry under date of April 26, 1949, and two letters from Charles F. Bassett, director of the United States Fur Animal Experiment Station, Saratoga Springs, N. Y., under dates of January 17, 1949, and March 17, 1949.

As will be shown later on, Mr. Kjaer was one of the two mink ranchers who ran into this difficulty in the breeding season of 1949, which, of course, occurred in March of the year.

On January 5, 1949, he wrote to Mr. Bassett of the United States Fur Animal Experiment Station, Saratoga Springs, N. Y. Not having his letter I cannot say what he wrote but Mr. Bassett wrote him several letters, in fact the two letters I mentioned. Perhaps I will be able to get a copy of Mr. Kjaer's letter from the Department through Dr. Byerly.

Mr. PARKHILL. Mr. Bassett's letters to Mr. Kjaer under date of January 17 and March 17, 1949, appear on pages 40 and 41.

Then on April 6 ,1949, Mr. Kjaer wrote to Dr. Siebold of the Department, and received a reply from Dr. S. O. Fladness, Acting Chief of the Bureau of Animal Industry, on April 26, 1949. Mr. Kjaer's letter and Dr. Fladness' reply are as follows [reading]:

SMITHTOWN, N. Y., *April 6, 1949.*

DEAR DR. SIEBOLD: I am sending one mink carcass for analysis. You will probably find bladder stones as we lost two mink in January with that condition and so far we have not been able to find the cause or a treatment. I would appreciate any help you can give me to clear up that trouble.

My real trouble is losing mink at the rate of one a month from undetermined causes. They appear healthy and contented, then all of a sudden droppings are dark, soon green and white slime, retching, lost appetite, paralysis, and death. Cause unknown.

This was my approximate feed formula until we had bladder stone trouble:

20 pounds fresh chicken heads
20 pounds fresh ocean fish
2 pounds fresh liver or liver meal
5 pounds Purina mink cereal
1 pound alfalfa meal
1 pound dried tomatoes
¾ pound yeast
½ pound steamed bonemeal
Cod liver oil
Wheat-germ oil and meat starting January.

After we found bladder stones we stopped the bonemeal and decreased the alfalfa meal and tomatoes, as the males had occasional bloody urine.

This year we could not get our males to work at mating time. They would try but nothing would happen and there would be a fight. This happened to adults as well as kits. We thought we had them in good condition, not too fat, not too thin, but we had to borrow males to breed our 60 females.

Last summer we had food poisoning due to improper freezing storage. We used Sulmet solution and had very few losses. Would this have any effect on the males at this time?

I do hope this mink arrives in good condition (dry ice seems to be impossible to get here), so you can try to give me a good report so desperately needed. We have been in the mink business for 2 years and raised a good little crop of Silver Blu last year, but these unknown losses are getting us down.

Very truly yours,

FREDERICK KJAER.

P. S.—I got your name and address from Saratoga Springs when inquiring into the use of chicken heads. F. K.

DEPARTMENT OF AGRICULTURE,
AGRICULTURAL RESEARCH ADMINISTRATION,
BUREAU OF ANIMAL INDUSTRY.
Washington 25, D. C., April 26, 1949.

Mr. FREDERICK KJAER,
Croft Lane, Smithtown, N. Y.

DEAR MR. KJAER: This is in reply to your letter of April 6 to Dr. Siebold concerning the carcass of a mink your forwarded to this Bureau for laboratory examination. Our Pathological Division is not in a position to make routine laboratory diagnoses for private individuals but, since the carcass was on the verge of spoiling when it was received, a post mortem examination was made to determine the cause of death.

It was found that the urinary bladder and pelvis of both kidneys were filled with a fibrinopurulent exudate, the spleen was enlarged, the liver showed evidence of fatty degeneration, and the lungs were partially filled with bloody fluid. On bacteriological examination a pure culture of a pus-forming organism was obtained from the heart blood and spleen. Large numbers of these bacteria also were seen in microscopic preparations made from the exudate in the kidneys and bladder. From these findings it can be concluded that the mink died of blood poisoning resulting from an infection of the urinary bladder and kidneys.

As you have been losing mink on account of urinary calculi (bladder stones) it is not surprising to find this case of bladder infection, because urinary calculi and infection often occur together.

Many investigators believe that an imbalance of materials such as magnesium and calcium in relation to phosphorus, together with a low intake of vitamin A, are conducive to calculi formation. The desirable ration of calcium to phosphorus in livestock feeding is considered to be about 2:1. It is impossible to evaluate the nutrients in your diet without complete chemical analysis. In taking out a part of the alfalfa meal the carotene (provitamin A) content of the diet was reduced and it is quite likely that the poor breeding was due to a lack of vitamin A. We do not know the composition of "sulmet solution" and so we cannot answer the question as to its effect on the male mink.

We are enclosing Circular 801 on mink raising which we believe will be of value to you.

In case you have need for laboratory diagnosis in the future, it is suggested that you forward the specimens to the diagnostic laboratory of the New York State Veterinary College at Ithaca, N. Y.

Very truly yours,

S. O. FLADNESS,
Acting Chief of Bureau.

(The letter to Dr. Siebold was marked "Exhibit No. 20" and was received in evidence and made a part of the record.)

Dr. BYERLY. Mr. Jonas, there is a comment that I would like to make.

I would like to call attention to the date submitted by Mr. Parkhill when the poultry waste in question was fed. He has referred to the dates in January, January 5 and January 17, and the date of this last letter which was just marked, April 6, 1949, and the statement is in the letter presumably as of that date, April 6, 1949, Mr. Kjaer was feeding a formula that had 20 pounds of fresh chicken heads in the diet.

Now, in the Kjaer bill, H. R. 2592, it reads:

> For damages sustained to mink as the result of using certain poultry waste upon the approval and recommendation of the United States Department of Agriculture from November 1948 to February 1949.

There seems to me to be an obvious discrepancy.

Mr. PARKHILL. I suggest there is no discrepancy whatsoever. We are not suggesting that this letter started the feeding of the chicken waste. It was the magazine article that started it. That is beside the point. I am offering this evidence today in support of Mr. Krueger's bill.

Mr. JONAS. Thank you for calling attention to the difference in dates. That is now noted in the record. It will undoubtedly develop in the argument what significance that has, I presume.

Dr. BYERLY. It still reports feeding chicken waste.

Mr. PARKHILL. Yes, that is quite true. I don't get the point. We will get to it later.

Then Mr. Kjaer's letter of April 6, 1949, is exhibit 20.

In the reply from Mr. Fladness, Acting Chief of the Bureau of Animal Industry, under date of April 26, 1949, which has been made part of the record, and which is also a part of the Kjaer affidavit, he has this to say:

> Many investigators believe that an imbalance of minerals such as magnesium and calcium in relation to phosphorus, together with a low intake of vitamin A, are conducive to calculi formation. The desirable ration of calcium to phosphorus in livestock feeding is considered to be about 2 to 1. It is impossible to evaluate the nutrients in your diet without complete chemical analysis. In taking out a part of the alfalfa meal the carotene (pro-vitamin A) content of the diet was reduced and it is quite likely that the poor breeding was due to a lack of vitamin A. * * *

Mr. PARKHILL. Now, among the documents requested of the Department of Agriculture for production today was a letter from Dr. Robert W. Enders of the Department of Agriculture, the date of which I was unable to fix, but warning of the danger of diethylstilbestrol to mink breeders where it is included in chicken heads.

Dr. BYERLY. I have difficulty in identifying the document you refer to. I talked to Dr. Enders Wednesday. Perhaps I can find it in the file. The only definite warning I can find from Dr. Enders is under date of January 6, so if you will let me search this file a little bit more I will try to produce it for you.

Mr. JONAS. Supose you check it now, if it does not take too long. You have given a date in January, but not the year.

Dr. BYERLY. Here is where he first expressed interest in chicken waste. Here is one on November 28. Here [indicating] is a definite note of warning of January 6. Those are complete files, as far as I know.

Mr. JONAS. Doctor, when you speak of January 6, what year?

Dr. BYERLY. 1950. There is no question January 6 is a note of warning which was given which was immediately followed by a press release.

Mr. PARKHILL. That is the one you and I discussed.

Dr. BYERLY. I believe so. November 28, according to Dr. Enders was the first note of warning on his part. We got that by telephone. November 28 was subsequent to that, but the first definite warning I can find in the record is of January 6.

Mr. JONAS. What relation does Dr. Enders bear to the Department of Agriculture and what are his duties?

Dr. BYERLY. We cooperate under a memorandum of understanding with Swarthmore College in problems of physiology of reproduction of mink so that you understand that Dr. Enders is our cooperative agent. In other words we support the work. We have at times, although not at the moment, paid a portion of his salary, but he is not under our administrative control. He is a professor at Swarthmore College.

Mr. JONAS. The Department does, at times, pay part of his salary?

Dr. BYERLY. Yes.

Mr. JONAS. And he has specialized in this research work having to do with this drug?

Dr. BYERLY. Insofar as I know there is no more eminent person than Dr. Enders in the field of the reproduction of mink in the use of this hormone.

Mr. JONAS. Do you think Dr. Enders would have any objection to appearing here, since he seems to be head of this whole project?

Dr. BYERLY. I could not presume to speak for Dr. Enders.

Mr. JONAS. Where is Swarthmore College?

Dr. BYERLY. It is just outside of the city of Philadelphia.

Mr. JONAS. It is up to you gentlemen, if you want him to appear. You can decide on it now. You must give a man who is in such a professional capacity time to arrange his affairs so that he can prepare for such a venture, because he evidently has classes and has class responsibilities to deal with. If you come to some conclusion about it we will be glad to act according to your wishes.

Mr. PARKHILL. I would much rather not bother Dr. Enders, if it is not necessary.

May I have just one more moment to examine this material?

Mr. JONAS. Go ahead. Off the record.

(Discussion off the record.)

Mr. PARKHILL. I should like to introduce first a letter of October 18, 1949, addressed to Mr. Douglas Millar, Yankee Breeding Farms, Huntington, Long Island, N. Y. This letter was sent by Dr. Robert K. Enders who signs himself "Agent."

This letter says:

DEAR DR. MILLAR: Some time ago you wrote to Mr. Charles F. Bassett of the United States Fur Animal Experiment Station, concerning the use of poultry waste that contains diethylstilbestrol. He asked my opinion of its effect on reproduction.

Could we secure from you some ovaries from mink that have been feed this material when you pelt? If you know your pelting date or dates we could come up and take the ovaries without putting you to the trouble of collecting the material for us.

I offer that as Exhibit No. 21.

(The letter of October 18, 1949, was marked "Exhibit No. 21," received in evidence and made a part of this record.)

Mr. PARKHILL. Next I have a letter dated November 4, 1949, addressed to Charles E. Kellogg, Fur Farming Investigations, Animal Husbandry Division, BAI, Beltsville, Md. This letter is from Charles F. Bassett, Director, United States Fur Animal Experiment Station, Saratoga Springs, N. Y., on the subject of Diethylstilbestrol in Chicken Waste.

The letter reads as follows [reading]:

OFFICE MEMORANDUM

To: Charles E. Kellogg, Fur Farming Investigations, Animal Husbandry Division, BAI, Beltsville, Md.

From: Charles F. Bassett, Director, United States Fur Animal Experiment Station, Saratoga Springs, N. Y.

Subject: Diethylstilbestrol in chicken waste.

NOVEMBER 4, 1949.

You will perhaps be interested in some remarks that were made by Dr. H. B. Walters, a veterinarian and an experienced mink rancher, who visited the station yesterday afternoon. Dr. Walters' production of mink this past spring was very low. He told me he obtained 97 kits from 300 females carried over, and he

blames the poor production entirely on the chicken waste which he fed, and which he believed contained the heads from a large number of broilers that were given diethylstilbestrol tablets injected in the neck. My first impression of Dr. Walters' comments was that he eliminated the poultry waste from his diet because he was convinced it was responsible for the poor production he obtained. Later, in asking him how he happened to eliminate the poultry waste, he stated that the person from whom he obtained it decided to use it to feed hogs, and therefore it would not be available.

Dr. Walters stated that a great many of the broilers raised in the north central part of the State in the vicinity of Rochester are treated with diethylstilbestrol, in spite of the fact that they are marketed as broilers. The reason for this is that less feed is consumed, the bird makes a greater weight, and the profit per bird is greater. He cited the instance of one individual who turns out 1,000 broilers per month, who figured his profits at 16 cents per bird under the ordinary system of poultry management, but these profits were increased to 24 cents per bird when each cockerel broiler was injected with the diethylstilbestrol tablet. Even though the birds are injected at 8 weeks and sold at 12, it was his opinion that broiler raisers felt it was well worth their while to treat the birds. Injection is made by a special hypodermic syringe which injects the pellet just under the skin in the neck. It was his opinion that there are vast quantities of broilers being marketed that are thus treated. I told him of our experience with local poultry men who had not even heard of capettes, but he stated that nevertheless he believed there were many of them marketed, and in his opinion this was perhaps one of the primary causes for poor production among mink fed poultry waste as the main or as the entire source of meat in the diet.

The poultry waste which Dr. Walters used was obtained for the most part from a local dresser, although when supplies ran short it was also procured through the Eastern Fur Farmers' Cooperative, which in turn obtained it from one of the larger broiler dressing plants in the Delmarva section. He felt that the material obtained from this latter source contained many heads from broilers thus treated.

Dr. Walters has raised mink for many years, and I would consider him a practical mink rancher. I do not attempt to vouch for the accuracy of these statements, and it may be entirely possible that his thoughts, as given above, are based more upon theory than upon actual facts. Nevertheless, he is a good personal friend, and I do not think for one moment that anything that was said was stated in an attempt to mislead us. Because this question has arisen before, and because I thought you might be interested in his opinions, this information is being sent to you, and copies of this memorandum are also being sent to Drs. Enders, Loosli, and Siebold. It may possibly be that you will wish to have a copy sent on to Dr. Gorham.

Copies to Dr. Enders, Dr. Loosli, Dr. Siebold.

(The letter of November 4, 1949, was marked "Exhibit No. 22," received in evidence, and made a part of this record.)

Mr. PARKHILL. So that the record may be complete there is a letter of November 28, 1949, from Dr. Enders to Mr. Kellogg on the subject Feeding of Chicken Waste Containing Diethylstilbestrol, which reads as follows:

I spent Sunday collecting ovaries and testes from pelted mink that had been fed poultry waste containing diethylstilbestrol, in one case up to March and in the other to May. The man who fed poultry waste up to May had no kits whatever on his farm. I collected more material than I can possibly use. Since the men are awaiting my verdict before they pelt again, I will have the material sectioned at once.

On Friday a paper appeared on the relation of food intake to the growth-depressing action of stilbestrol. This work was done on rats and we have no similar data on mink. It has been found that natural estrogens depress growth without depressing appetite. Also by feeding thyroxine overcomes the lactation—inhibiting action of diethylstilbestrol. It occurs to me, therefore, that if capette waste is to be fed to mink, we should run an experiment as follows:

First, does this inhibit growth?

Second, does it inhibit appetite?

Third, and probably most important, can we overcome these effects by the simultaneous feeding of thyroxine?

Also I believe an experiment should be set up with breeding animals fed thyroxine with chicken waste to see if here again we might not overcome the effects of the sex hormone.

As you can see, this is just notions that have occurred to me on the way home, and I would like to have your ideas. I might also remark that it would be grand if the chicken-waste producers could furnish some funds for this type of work. Certainly the mink growers are anxious to have the work done since quite a few are now depending on chicken waste for food. Have you any suggestions as to how I should pursue these studies further?

A copy of this letter was sent to Mr. Bassett. That is exhibit No. 23.

(The letter of November 28, 1949, was marked "Exhibit No. 23," and received in evidence, and made a part of the record.)

Mr. PARKHILL. The next exhibit I wish to offer is a letter under date of December 14, 1949, from Dr. Enders to Mr. Kellogg. Is that correct?

Dr. BYERLY. Yes, sir; that is correct.

Mr. PARKHILL. Transmitting an article on feeding chicken waste containing stilbestrol. The memorandum reads as follows:

Enclosed is a brief article concerning which I wrote you. This is what Fresch wanted for the Co-op Fur News. If you approve of it, could you send it to him and to any journals that you would like to have it. There is nothing profound about it. I have not given the experimental evidence, but I think I have indicated the need for more research.

You might be interested to know that in a personal communication from Carl Hartman he mentions that he thinks the use of stilbestrol in poultry should be stopped. He considers it fraudulent for the weight gains are to some extent due to a higher percentage of water in the fat.

If we are to get animals in time to do it this spring we had better rush this. As you see, I am leaving the title up to you.

That will be exhibit 24.

(The memorandum was marked "Exhibit No. 24," was received in evidence and made a part of the record.)

Mr. PARKHILL. I have next an office memorandum that I offer as Exhibit No. 25. It is from J. K. McClarren, head, Information Division, to T. H. Bartilson, acting in charge, Animal Husbandry Division, Beltsville, on One Aspect of Mink-Breeding Problems. This is dated January 3, 1950. The article is accompanied by an office memorandum in regard to it. This article was disapproved January 3, 1950. The memorandum of disapproval reads as follows:

We have reviewed the attached manuscript and feel that it should not be released to fur-trade journals in its present form. In the first place, the introduction describing stilbestrol indicates greater possibility than the later contents bear out. In fact, in a discussion of the work, every result noted indicates that such a powerful drug should not be used by fur farmers, at least until further research has been done.

It seems to be aimed at obtaining funds from fur breeders to further this research, although the article does not come out flat-footedly and say so. If this is the aim, wouldn't some other approach be desirable? Certainly the article does not contain any information about the drug which the breeder can put to use.

About all that one could say is that stilbestrol is a potent drug and that preliminary work indicates that it may have possibilities, although results, so far, have been negative and further work will be needed to obtain results that will be of any help to the mink breeder. If the paper is reorganized in this way, there should be a statement cautioning the layman against the use of the drug.

If you suggest that changes have been indicated in the text for the author's consideration. If the paper is rewritten, we request it be resubmitted for Bureau approval.

(The data above referred to were marked "Exhibit No. 25" and received in evidence and made a part of this record.)

Mr. PARKHILL. The next exhibit I wish to offer is an office memorandum of the United States Government dated January 6, 1950, from Dr. Robert K. Enders, Swarthmore College, Charles E. Kellogg on the subject Diethylstilbestrol in Chicken Waste, which reads as follows:

It has just occurred to me since the matter of stilbestrol has been dropped, that a note of warning on the feeding of poultry waste should be issued. Since a large number of mink breeders know that we are aware of the dangers the Bureau might be exposed to serious criticism if such a warning was not issued.

Since the Bureau has published work on the feeding of chicken waste its critics might feel that it was all the more culpable if some warning were not issued after the trouble encountered by breeders had been brought to its attention. I believe that Mr. Bassett would bear out my statement that trouble with chicken waste containing stilbestrol is more widespread than we have thought possible.

Mr. JONAS. What is the date of that memorandum?

Mr. PARKHILL. January 6, 1950.

(The memorandum was marked "Exhibit No. 26" and received in evidence and made a part of this record.)

Mr. PARKHILL. And so finally the Department in February 1950 issued its first warning, although I think the record is clear, and I think when this other correspondence comes in, it will be even clearer that this whole matter which they had known about from the beginning, anyway, had been specifically brought to their attention early in 1949.

Mr. JONAS. Then you had warning issued but it was just a conclusion. I wish you would read it.

Mr. PARKHILL. The article is entitled "Suggestions in feeding poultry waste to mink."

This is the United States Department of Agriculture, Bureau of Animal Industry. They issued a mimeograph dated February 1950. There is no argument about this being the bulletin, is there?

Dr. BY'RLY. No; I have the letter of approval authorizing it, if you want it.

Mr. PARKHILL. I would be glad to have it.

Mr. Chairman, I wish to offer as my next exhibit No. 27 the letter of February 8, 1950, from Thomas H. Bartilson, acting in charge, Animal Husbandry Division, to B. T. Simms, Chief, Bureau of Animal Industry, on the subject Approval of Article, and the body of the memorandum reads as follows:

Approval is requested of the attached article entitled "Suggestions in Feeding Poultry Waste to Mink" by Charles F. Bassett. This is to be put into mimeograph or ditto form for answering correspondence on this subject. This manuscript has been reviewed and approved by the Pathological Division and Dr. Bird. This will not need a pamphlet number since it is to be used currently in answering correspondence.

Now, that was approved by the Chief of the Bureau on February 14. I offer this as exhibit 27.

(The memorandum agreement of February 8, 1950, was marked "Exhibit No. 27" and received in evidence and made a part of the record.)

Mr. PARKHILL. I would now like to read Mr. Bassett's article on Suggestions in Feeding Poultry Waste to Mink. It is as follows [reading]:

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY,
February 1950.

SUGGESTIONS IN FEEDING POULTRY WASTE TO MINK

Poultry waste, which generally consists of the head, feet, and entrails of chickens, is being used in increasing amounts as a partial replacement for horse meat in the feeding of mink. Under certain conditions, this product makes a very satisfactory and suitable horse-meat substitute. The results of some studies initiated by Dr. Robert K. Enders of Swarthmore College, in cooperation with the Department of Agriculture, and experiments conducted at the United States Fur Animal Experiment Station, Saratoga Springs, N. Y., indicate, however, that some caution should be exercised in the use of this product, particularly during the reproduction cycle, if unsatisfactory results are to be avoided.

POULTRY WASTE FROM CAPONETTES

Quite recently a drug, diethylstilbestrol, has found increased favor in the poultry industry for chemically sterilizing male chickens. This drug is injected as a pellet in the neck of the bird and, by inhibiting growth of the sex organs, increases the weight with little if any increase in food consumption. Birds so treated are called caponettes. Any portions of the pellet remaining undissolved in the neck when the bird is slaughtered will, of course, be present in the poultry waste. Preliminary studies indicate that even small portions of pellets, when fed to mink, particularly kit females, can disastrously affect future reproduction.

Ranchers using poultry waste in their mink feed should ascertain immediately whether viscera and heads from caponettes are included in the waste they are using and, if so, should discard such material at once, or use it next summer and fall only for feeding animals that they are planning to pelt. Caponette waste should, of course, be separated from other poultry waste as processed and immediately discarded, until future studies have indicated the amount and extent of the damage likely to result from its use.

AMOUNTS TO FEED

During that period from January 1 until the kits are 7 weeks old, it is advisable to limit the amount of poultry waste in the mink diet to not more than one-third the total meat content. In two reproduction experiments with mink conducted at the station in 1948 and 1949, the production of young by females receiving diets containing 35 percent liver was exceedingly poor. The factor or factors responsible for such production are as yet unknown, but it appears quite certain that no waste from caponettes was included in the poultry waste fed. Until more information is available concerning the cause of the low production, it is believed advisable to limit the poultry waste used at this stage in the mink life cycle.

Poultry waste, free from caponette heads, makes a good substitute for horse meat for feeding adults and weaned kits throughout the summer and fall until pelting. Growth is good, particularly the growth of kits immediately after weaning and, since this product is relatively economical, some savings in feed costs will probably result.

PROCESSING THE POULTRY WASTE

Obtain fresh poultry waste from healthy birds at regular intervals. Try to arrange for its refrigeration from the time it is processed at the poultry plant until it can be picked up. It is desirable, of course, to avoid letting such material stand on a truck in the hot summer sun, as it deteriorates rapidly. Grind it upon arrival and use it in the feed mixture immediately, or freeze and store for future use.

In grinding the poultry waste, no attempt is made to remove the intestinal contents, since few mink ranchers have the equipment necessary for hashing and washing. Gizzard linings and their contents, as well as metal or celluloid bands on the legs, should be removed prior to grinding, not only to prevent injury to the mink but to avoid damage to the grinder.

COOKING POULTRY WASTE

The object of cooking poultry waste before feeding is to avoid the risk of losses due to food-poisoning organisms particularly Salmonella-type organisms that may be present in the waste. Most mink ranchers and a number of authorities in the industry feel that such practice is advisable. Whether or not to cook the product is a question that must be decided by each individual rancher. If raw poultry waste is fed, particular attention should be given to maintaining good conditions of management as outlined in the foregoing section entitled "Processing the Poultry Waste."

SUMMARY

Until additional information from properly controlled experiments is available, the following recommendations are in order:

1. Procure the poultry waste in a fresh condition, at regular intervals, from healthy birds. Discard diseased, thin-breasted birds that have been thrown out as unfit for human consumption.
2. Do not feed poultry waste from caponettes either during the reproduction cycle or during the summer, fall, and early winter to animals that may be kept over for the breeding herd.
3. During the reproduction cycle, do not replace more than one-third of the fresh meat and visceral products with poultry waste.

As more information on the feeding of poultry waste becomes available, it will be passed on to fur ranchers through articles in the trade journals or in mimeographed leaflets.

Mr. JONAS. That is dated February 1950?

Mr. PARKHILL. Yes, sir; and I wish to reemphasize that this letter of approval is dated February 14, 1950, so it was released on February 14, 1950.

Dr. BYERLY. No; either that or the next day.

Mr. JONAS. Dr. Byerly you have this mimeograph issued on or about February 14, 1950, which gives consideration to this drug and you refer particularly to "poultry waste from caponettes" and you make the definite statement in the article:

Preliminary studies indicate that even small portions of pellets (that is diethylstilbestrol) when fed to mink, particularly kit females, can disastrously affect future reproduction.

Isn't that a warning?

Dr. BYERLY. A definite warning.

Mr. JONAS. Yes. Now in order to shorten up the record it is conceded that there was an inherent danger in this drug after it was being used and that your research was showing it interfered with reproduction. It seems that is what is in that document.

Dr. BYERLY. I think it is this. It is, I believe, in the formal report as you have stated. It is presumed that mink got enough diethylstilbestrol to impair their reproduction but as to what is "enough," nobody knows. You do not know at what point breeding would be interfered with. Now the figure 3 milligrams has been stated and taken at a particular time and place, during or subsequent to the breeding season, it was found in a limited number of animals not to interfere with the breeding insofar as appears from the evidence available. Whether it would so interfere at other times is not known.

The presumption that diethylstilbestrol would interfere with mink breeding is great but the demonstration from experimentally feeding waste from caponettes to mink is lacking.

Just now we are conducting experiments at Saratoga with waste from caponettes. Those experiments are going on and we will have the results in several months. We have no such evidence at this time,

to the best of my knowledge, and to my knowledge no such evidence exists. This is a presumption based on expert opinion.

Mr. JONAS. But you know the number of milligrams of this drug that has been implanted in each one of these birds and you know there has been a residue that was unabsorbed.

Dr. BYERLY. Yes, sir.

Mr. JONAS. Has it been determined definitely that mink fed chicken heads containing parts of unabsorbed residue of this drug have become sterile?

Dr. BYERLY. That experiment is only now in process of determination.

Mr. JONAS. You understand, Dr. Byerly, I am merely asking these questions to enlighten myself. You must help me. We know nothing about this question.

Mr. PARKHILL. Doesn't that letter I just read here specifically and clearly say that the use of this pellet as it is applied in your experiment, for the purpose of fattening up the caponettes, that that is the basis for giving this warning?

Dr. BYERLY. The basis of the warning notice is the experience of the ranchers, as observed by Mr. Bassett and Dr. Enders, and they reached their conclusions on the basis of their observations that there was a high probability that the difficulty lies with the use of the waste from caponettes. It does not lie on controlled laboratory experiments.

Mr. JONAS. May we have that last document, so that we can clear up this point?

Mr. PARKHILL. Yes [handing exhibit No. 28 to Mr. Jonas].

Mr. JONAS. Now would you mind looking at the paragraph containing the warning. What do you think of that language? What implication can we draw from it and what conclusion can we come to if we follow the language of the document?

Dr. BYERLY. In regard to the conclusion again, it is based on the opinion of these experts. There is a very strong presumption that feeding waste from caponettes to breeding mink would cause them trouble.

Mr. JONAS. Well, when you use the word "trouble," I associate that with the expression contained in this document where you say it affects the reproductive organs. What we want is a definite connection between the feed and reproduction. When we can definitely determine that, doesn't the presumption then turn into a fact? In other words, you cannot come to any other logical conclusion. Presumption cannot be based on presumption. You call it presumption and I will agree with you, but if the ultimate result shows up, does that not lead to a conclusion?

Dr. BYERLY. Breeding failures in mink can come from many sources.

Mr. JONAS. I am glad to hear you say that. Go ahead.

Dr. BYERLY. May I cite an example? In the 1950 breeding season at Saratoga we had 111 females bred and we got 14 litters; and so far as we have been able to determine there never was a caponette head in that feed. There was chicken waste in the feed. There was some potatoes, some horse meat which had been in storage for years and was rancid. It may have been any one of numerous possible causes for failure but, insofar as we have been able to determine after a

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most careful search, Mr. Bassett was not able to make either head or tail of the breeding failure. Yet I say, sir, there is a presumption until it has been demonstrated. It is a strong presumption. It is not something that we can determine scientifically until by May or June of this year and not before then could I say to you that I know feeding caponette waste will cause breeding failure.

Mr. JONAS. But you warned in regard to feeding poultry waste from capettes.

Dr. BYERLY. That is based on the field opinions and statements of ranchers who said that feeding caponette waste was causing trouble and also the opinions of Dr. Enders and Mr. Bassett. How much caponette waste they fed, when they fed it in many cases, is not known. Some cases the evidence seems quite authentic that they fed rather large amounts and it is in those cases the evidence seems strong, but I point out it will be rather a presumption until after our studies have been completed, although it is a rather strong presumption.

Mr. PARKHILL. May I ask Dr. Byerly a question for the clarification of this issue:

Do I not understand you correctly, Dr. Byerly, that you do not accept as scientifically established or as scientific knowledge any fact that has not been established by a controlled experiment?

Dr. BYERLY. That is especially true with respect to that.

Mr. PARKHILL. May I have a direct answer? That is your attitude on the matter of scientific knowledge. That is your personal attitude.

Dr. BYERLY. That is correct.

Mr. MACHROWICZ. Do you expect by May or June of this year to have completed your experiment so that you can report to Congress what conclusion you have reached from your scientifically controlled experiments?

Dr. BYERLY. That is correct. We hope the experiments will have been concluded by that time. We assume there will be a favorable outcome of the experiments. As I say, things may happen, but we have no reason to believe we will not be able to report at that time.

Mr. PARKHILL. I don't want to take the unfair advantage of my good friend, Dr. Byerly. On this matter, I pointed out to him in this case formerly, astronomy is the oldest and the greatest of the sciences and it is purely an observational science. With the others, their opinions are on the basis of their observations and they do not entirely agree with the limitations that Dr. Byerly, a very fine scientist, imposes on himself.

Mr. JONAS. There are always two sides to a question and my purpose in asking this question now was to see if we could not shorten this up and get Dr. Byerly's viewpoint as to what his definite defense was in reference to the claim you are making here.

Dr. BYERLY. I think I can outline it in a fairly few words, sir.

I will have to review a little bit the reason why I am particularly careful of estrogens. The effects of an estrogen cannot be predicted—how it will act on any particular animal. It can only be determined by experiments. We conducted recent experiments at Beltsville in regard to their use in livestock. We fed estrogens in greater and greater doses from 0.025 to 50 milligrams a day. We fed estrogens to gilts anticipating continuous heat. That was also observed to develop in other female classes of livestock. In this case we did not get continuous heat but pseudopregrancy. Then we repeated the ex-

periments. The first gilt was given 250 milligrams of diethylstilbestrol and in 3 days she was in heat and she is still in heat.

With respect to the use of estrogens they are used in very large quantities and for different purposes. They come from many sources. It comes from many plant sources. It is found in beet root seeds; it is found in potato tubers, parsley roots, and yeast. Honey was found to contain from 40 to 600 units in 1 kilogram and from dry sage there was found 6,000 units of estrogen in 1 kilogram. Going further, from 1,000 to 2,000 units of estrogen were found in a kilogram of mineral oil; a kilogram of naphtha yielded 8,000 m. u. and 10,000 m. u. were obtained from a kilogram of natural asphalt. Estrogen was also found in coal.

One of the largest sources of estrogen is the testes of a stallion, which I think you will grant is not lacking in virility. Estrogens are found in many things and in many places. They have many effects, depending on age, sexual condition, and the season. It is necessary, therefore, to be very conservative unless one knows what estrogen will do.

Mr. JONAS. From an experimental standpoint there is a great deal of merit in what you say but when you get back to the cold fact of the insertion of these capsules in the neck or head of capons and then turning that head with the unabsorbed pellet into chicken waste and it ultimately gets into the mink's body, isn't it comparable to the situation the pathologists find every once in a while in examining viscera of a man, for instance, in an arsenic case? It has been proven repeatedly and, of course, I am talking as a layman. You know much more about it than I do; but in making a postmortem on a human being in determining whether arsenic was used, take a man who has a jaundiced liver or other ills, he does not need the quantity of arsenic to kill him as a strong, healthy individual would. Isn't that one of the theories upon which doctors can and do testify quite frequently?

Dr. BYERLY. There are some very interesting things in the history of these mink. In the first place Dr. Enders undertook work on estrogen in order to produce breeding behavior. The first use was to cause increased breeding behavior in rats 20 years ago. Now I want to emphasize the point that he undertook the experiments to induce breeding behavior on perfectly sound grounds. It is a fairly routine veterinary practice although I do not know that it is excellent practice to induce breeding behavior in cows for artificial insemination.

Twenty-five milligrams induces it; 100 milligrams will induce abortion. It all depends on the condition of the animal and other elements which determine the effect of the estrogen. Now, with respect to the effect of estrogen in chickens and turkeys——

Mr. JONAS. You do concede, don't you, that after you have developed this experiment of putting these capsules in the heads of caponettes and then have taken that chicken waste and fed it to the mink, you concede there is some connection between residuum of the pellet that was buried in the chicken heads, fed to the mink, and that the mink did not conceive?

Dr. BYERLY. What I said, there is a probability that the feeding of this to the mink was the cause of trouble. I do not admit it, but I can see it was very probably the case.

Mr. JONAS. It is the basis on which you can reason.

Dr. BYERLY. In making that concession, however, I do not wish to concede any more than that.

Mr. JONAS. And wasn't the objective in issuing the warning the very thing that you and I were talking about—that there was certain danger in feeding caponette heads in which was a residuum of the pellet to mink which, being absorbed by the animal, might have a deterrent effect upon the power to produce their young? Is that correct?

Dr. BYERLY. That is correct.

Mr. PARKHILL. While we are on the subject, Dr. Byerly, I wonder if we could agree that diethylstilbestrol is not, strictly speaking, a hormone. It is a chemical which acts in certain regard like a hormone. Isn't that true?

Dr. BYERLY. It is a chemical substance with estrogenic effect.

Mr. PARKHILL. However, the effect of diethylstilbestrol differs from the effect produced by the natural hormone?

Dr. BYERLY. In some cases.

Mr. PARKHILL. Isn't it true that diethylstilbestrol, while it resembles the sex hormone and affects ester or estrum in the female, unlike the natural hormone, prevents ovultation?

Dr. BYERLY. I don't concede it; no.

Mr. JONAS. You use the terms estrogenic and estrogens. How do you produce estrogens? What ingredients are in them?

Dr. BYERLY. Mr. Parkhill referred to diethylstilbestrol as a drug, a chemical consisting of a couple of carbon rings—two six-carbon rings with a couple of ethyl groups.

Now, when we speak of estrogens appearing in nature, as I stated the tests of a stallion is one of the very richest sources. Another very rich source is the urine of pregnant women, and specifically we look for estrogen in the ovaries; and that is basically responsible, therefore, for the preparation of the uterus for implantation of the cell or secretion of egg envelopes. In the chicken it also affects the characteristics. They will put two pellets into the back of the head of a young turkey, and turkeys 10 to 12 weeks old strutted. It has been found to bring about a stimulation of mink-mating activities.

Diethylstilbestrol is not just another drug. Now, there is some confusion in the record which I should like to clear up at this time.

Mr. JONAS. Do you have to have estreum before you get the stimulating characteristics?

Dr. BYERLY. No.

Mr. JONAS. One is dependent on the other for production?

Dr. BYERLY. No, sir.

Mr. JONAS. All right, Mr. Parkhill; you may proceed.

Mr. PARKHILL. I would like at this time to refer to the attention of the committee to an article by Dr. J. Deckerd Guess, on Clinical Experiences With Diethylstilbestrol, which article appeared in the Journal of the South Carolina Medical Association, volume 40, page 303, printed at Greenville, S. C., in 1944, in which Dr. Guess states as follows:

> Diethylstilbestrol, originally introduced in America as stilbestrol.
>
> Tendency of diethylstilbestrol is to depress the ovary, either directly or through the anterior pituitary, and thus to inhibit ovultation, without which, of course, pregnancy cannot occur.
>
> The average dose one milligram, but one-half or oven one-fourth of a milligram may be sufficient.

Now, if I may resume at the point of my approach where I stopped, I would like to next offer an article on The Comparative Value of Some Horse Meat Substitutes, by Charles F. Bassett and Hugh F. Traverse, Fur Animal Experiment Station, Bureau of Animal Industry, USDA, Saratoga Springs, N. Y.

This article appeared in the May 1950 issue of the American Fur Breeder, starting at page 6.

Do you have the authorization for this article, Dr. Byerly?

Dr. BYERLY. Yes; here it is [handing to Mr. Parkhill].

Mr. PARKHILL. Dr. Byerly has now produced the official memorandum approving this manuscript for publication and distribution. It is approved under date of March 6, 1950, by Mr. Fladness, the Acting Chief of the Bureau.

This article also refers to the feeding of chicken waste as being a satisfactory substitute and a more economical feed ingredient to use than horse meat. It contains no warning of danger of diethylstilbestrol. It was approved nearly a month after this warning was issued. There are still, after that warning in February, printed articles about the feeding of chicken waste and not telling of the danger.

I would like these to be marked exhibits 29 and 30.

(The memorandum and article above referred to were marked "Exhibits 29 and 30," respectively, were received in evidence, and made a part of the record. See p. 150.)

Mr. PARKHILL. More than that, that article is not only printed in May of 1950 but it was reprinted and its publication not stopped by the Department in the American National Fur and Market Journal of June 1950. It was also reprinted in the National Fur News in July 1950.

Now, during this period of time, of course, March was the breeding season in 1950 and any warning issued, the date of its approval, I believe, was the 14th of February. That did not mean the warning was effective because in February it was too late to do any good insofar as the mink could have been fed these doped chicken heads up to that time.

Mr. JONAS. We will recess until 2 o'clock.

(Thereupon, at 12 o'clock noon, a recess was taken until 2 p. m. of the same day.)

AFTER RECESS

Mr. JONAS. Have you any additional exhibits to present?

Mr. PARKHILL. Yes, sir.

Mr. JONAS. All right; we will proceed with what you have.

Mr. PARKHILL. Mr. Chairman, I meant to say this morning that I have been informed that one of the circumstances about which the Canadian Government has been concerned has been in regard to this practice—first of all is the chances from eating the meat of chickens that have been drugged—but the Canadian Government is also concerned of the fact that here is a very potent drug which no doctor would give his patient a prescription to fill at a drug store and you could not get it at a drug store without a prescription. It is a drug which causes heat in the female and at the same time prevents conception, and yet you can get it in every feed store. You can buy these pellets for $2.50 a box. I don't think I made that statement this morning. I intended to. I should like to have that put in the record.

Now, as I recall at the time we stopped, I was just mentioning the fact that the Bassett article, originally published in May, referred to the feeding of chicken waste and without giving any warning, although the Department was certainly aware of the fact, having issued the mild warning in February. That article of Mr. Bassett's was reprinted in June in the American National Fur and Market Journal and I should like to introduce it in evidence as exhibit No. 31.

Mr. JONAS. Do you mean it is reprinted in a subsequent journal?

Mr. PARKHILL. Yes, it was reprinted in June of the same year. And then, again, it was printed in the National Fur News for July. I would like these two magazines containing the article to be marked exhibits 31 and 32.

(The magazines above referred to were marked "Exhibits Nos. 31 and 32," respectively, received in evidence, and made a part of the record.)

Mr. PARKHILL. Now, in June of 1950, Mr. Bassett gave a talk before the Wisconsin Fur Breeders Association, meeting in Milwaukee, Wis., on June 22, on the use and misuse of poultry waste in the feeding of ranched mink. This was later published, I believe, in July 1950 in the Black Fox Magazine and Modern Mink Breeder.

I should like to introduce in evidence the approval of the manuscript in question, dated June 15, 1950, bearing the signature of Mr. Fladness, the Acting Chief of the Bureau, as exhibit 33, and then I should like to introduce the magazine as exhibit 34, and then the release of the article by the Department for distribution on August 31, 1950, as exhibit 35.

(The office memorandum, magazine, and mimeograph were marked "Exhibits Nos. 33, 34, and 35," respectively, received in evidence and made a part of the record.)

Mr. PARKHILL. I should like to read briefly from this release, so to speak, and I would like to say in advance that this is the second warning to the mink ranchers and the one that was inspired by the losses of Mr. Krueger and others in the 1950 breeding season.

The February warning was based upon losses in the 1949 season. This is the warning in 1950 and is much stronger in tone than the February release. I will read a portion of it [reading]:

POULTRY WASTE FROM CAPONETTES

Quite recently a drug, diethylstilbestrol, prepared in the form of pellets, has found increasing favor in the poultry industry for chemically sterilizing male chickens. Birds so treated are called caponettes. The size of the pellets and the dosage of diethylstilbestrol may vary to some extent with the manufacturer. In general, however, the pellets are small, about the size of No. 8 shot, and of a lemon yellow color.

In the operation of sterilizing the chickens, the pellet is injected into the neck of the bird about 1 inch below the back of the comb. The point of the injector is moved around under the skin from side to side sufficiently so that an area is prepared where the pellet can be deposited. The injector spring is pushed forward and the pellet is placed in the prepared area. Pinching of the skin in back of the pellet prevents its slipping out as the injector is withdrawn.

The length of time such pellets are effective again depends upon the dosage of diethylstilbestrol contained in the pellet, but one variety which is on the market is effective for 5 to 6 weeks, and its use is not recommended until the birds are to be treated are at least 6 weeks old.

Not only does the use of pellets of this type result in a bird whose sexual development has been depressed, but faster gains in weight are made, with less feed, the birds are very tender and tasty, and hence more desirable.

The use of this product is increasing at a tremendous rate, particularly in the East, and one must recognize this fact in considering the use of poultry waste for feeding mink.

Last fall we received a number of letters from mink ranchers who asked if the use of poultry waste from caponettes might have been the causative agent responsible for the poor production of young, experienced during the 1949 season. In addition, they wished to know whether the future reproductive ability of a mink would be permanently injured by feeding a diet in which poultry waste from caponettes was a major ingredient.

Dr. Robert K. Enders, an agent of the Bureau, who has studied the reproduction cycle of the mink for many years, visited a number of mink ranches in New York State during the 1949 pelting season, where poultry waste from caponettes had been fed. He removed the ovaries from a large number of carcasses of both kits and adult females, sectioned them, and studied them microscopically.

His findings indicated that ovaries from kit females thus fed may be irreparably damaged and he advised those ranchers whose animals he had examined to pelt all their kit females.

The adult females, on the other hand, appeared to be affected less seriously, and, in his opinion, if the caponette waste was removed from the diet, immediately those animals, in all probability, would produce normally.

In the past few weeks we have had a number of letters from ranchers who inadvertently fed poultry waste containing caponette viscera during the 1950 reproduction period. One rancher with 286 mink females carried over but one litter of young produced and this litter was whelped by a female purchased from an outside ranch 3 weeks previously and mated by a male who had come from another ranch just a short time before.

Another rancher with a production failure of 90 percent has written in to ask whether caponette heads, which he fed to the exclusion of all other poultry viscera, might have been the causative agent for his poor production. A neighbor feeding caponette heads only occasionally reported a failure of 20 percent of his females to mate.

Numerous reports, such as these, when combined with Dr. Enders' findings, have caused us to make the following recommendation in regard to the feeding of caponette waste: Under no circumstances should poultry waste from caponettes be fed to either adults or growing mink except to animals that are going to be pelted the following fall. Mink fed caponette waste should not be kept over for the breeding herd.

Quite possibly other chemicals or drugs may be found which will counteract the disastrous result attendant upon the feeding of caponette waste to mink, and this problem is to receive our early attention. Until further information is available, we believe it is inadvisable to use this material in the mink diet under the conditions stated above. * * *

I should next like to introduce as exhibit No. 36 a release by the Department of Agriculture under date of August 4, 1950, entitled "Mink Production in Relation to Stilbestrol" by Robert K. Enders, agent, and William Lloyd Merritts, agent, Bureau of Animal Industry and Swarthmore College, cooperating.

(The mimeograph of August 4, 1950, was marked "Exhibit No. 36," received in evidence and made a part of this record.)

Mr. PARKHILL. I would like to read this exhibit. I think this gives perhaps a full exposure of this whole problem from a man, one of the Government's agents who, with all due regard to Dr. Byerly, is a man who worked closer to this problem than anyone else.

Mr. JONAS. Who are you referring to?

Mr. PARKHILL. I am referring to Dr. Enders. The article was given widespread distribution. It is entitled "Mink Production in Relation to Stilbestrol" and it reads as follows [reading]:

AUGUST 4, 1950.

MINK PRODUCTION IN RELATION TO STILBESTROL

(By Robert K. Enders, agent, and William Lloyd Merrits, agent, Bureau of Animal Industry and Swarthmore College Cooperating)

The use of poultry waste in the feeding of mink has become widespread. Various sources estimate that between 40,000 and 50,000 animals have received this feed during the past year. Where the product contained some active estrogen its use appears to have resulted in breeding failures, some complete, some partial. Circumstantial evidence indicates that the substance involved is diethylstilbestrol. This synthetic estrongenic hormone was released for use in fattening poultry in the fall of 1947 and it has come into wide use in the chemical castration of poultry and its use is being extended rapidly. It is not known whether all waste from caponettes which is a common name applied to treated birds is harmful or if it is only the pellets of the hormone that remain unabsorbed by the bird that cause breeding failures in mink. Here again circumstantial evidence indicates that it is the residue of the unabsorbed pellet that gives the waste from treated birds its undesirable quality.

Experimental proof that diethylstilbestrol injected into or fed to female mink during the breeding season will bring about breeding but will interfere with the production of kits has been in existence for 4 years and some of the evidence was published in 1947. In fact this hormone is so potent that mink deprived of their ovaries will attempt mating, if given this hormone during the breeding season. But diethylstilbestrol does not act like the natural estrogens of the mink for while it induces breeding behavior it does not bring about vulvar swelling. Diethylstilbestrol, moreover, interferes with the follicles in which the eggs are growing so in spite of breeding few if any kits will be born.

In 1948 and 1949 we tried to get reports from mink breeders who asked for this hormone to use on females still unbred at the end of the season. Quite a few used the hormone but only a few were interested enough in the experiment to send in their results. Those cooperative enough to do so reported successful matings but no live kits so one is led to believe that the men who did not report were disappointed in reproduction too. These cooperators were warned at the time that the material was sent to them that its use was experimental, and that they were dealing with a very potent hormone. One must remember that these females were not treated until it was clear that they were not likely to breed and that production from late matings is poor under normal conditions. It is fair to assume, however, that part of the failure to produce kits arose from the affect of the diethylstilbestrol on the ovary.

The following cases are presented to illustrate the type of troubles encountered and to show how an analysis of the known facts, even where the facts are not supported by planned experimental work, can point out dangers in feeding material suspected of containing a synthetic estrogen. Since the use of synthetic estrogens in fattening poultry is expected to increase threefold this year the fur farmer who plans to feed poultry waste should be alert to the dangers.

When chicken waste, suspected of being from caponettes, was fed from November to March the mink so fed produced not a single kit. When fed from November to June the same disastrous results followed as when it was fed for the shorter interval. No one knows how much diethylstilbestrol these animals received nor does anyone know how much is required over such a length of time to bring about these failures. It is suspected that chicken waste with diethylstilbestrol was the factor involved, for cats fed the same feed bred continuously but did not produce kittens until the feed had been discontinued for some months. The ovaries of kit minks fed this diet showed, on sectioning and examination under the microscope, a considerable disturbance of normal development.

Where chicken waste, again suspected of containing material that had had pellets of diethylstilbestrol implanted under the skin, was fed over a long period of time but not at a high level total failure of reproduction followed the feeding. Here again cats living on the same feed as the mink bred furiously and continuously but did not produce kittens. This effect on cats is emphasized for ovulation in the cat follows copulation much as in the mink but unlike the mink the cat goes out of heat following ovulation. The continuous heat without the pro-

duction of kittens shows that some hormone, either the cat's own or that taken in the feed, kept the cat in heat and interfered with physiological processes either of ovulation, fertilization, or implantation, but most probably ovulation. Had the cats ovulated and corpora lutea formed, as under normal conditions, they would have gone out of heat for 36 days even though fertilization did not follow ovulation. We can infer that it was the failure of ovulation that was responsible in part for the continuous heat. This type of behavior of cats on ranches many miles apart but all feeding on poultry waste is indicative that in each case the chicken waste contained some ingredient that brought about this unnatural condition, for chicken waste was about the only ingredient common to the mix fed at all these ranches.

On another ranch waste containing heads of both chickens and turkeys was used in the feed from January until March. Subsequent checks of the source of supply verified the fact that some of the waste was from poultry treated with diethylstilbestrol. On this ranch the males would not copulate and on examination in early March the testes proved to be as small as they usually are in December. These animals were treated with iodized casein from March 15 to April 5. Since the males were not in breeding condition three males were brought in from unaffected ranches. Forty percent of the females bred, but of the females breeding only 4.4 percent bore litters. All of these litters were sired by one male so it is possible that the other two males were at fault. Even though all three males had been as good as this one male only 13.2 percent of the females bred would have produced litters. Because only 40 percent of the females were bred and because only 4.4 percent of these bore litters the percent of females kept over bearing litters was less than 1 percent. Once again the reader must remember that these matings took place late in the season. An important finding on this ranch was that the testes of the male approached normal size about the first week in May. Whether this was the natural result of the withdrawal of some ingredient in the feed or due to the feeding of the iodized casein referred to before is not provable under the circumstances for the discontinuance of the suspected poultry waste and the feeding of iodized casein was done simultaneously.

Poultry waste, some of which came from caponettes, fed over the winter and spring but not fed continuously resulted in erratic breeding behavior and in some implantations but in the birth of but one kit. Animals that had been brought to this farm a few weeks before the breeding season reproduced normally. The kit was examined in late June and appeared to have been born very late in the season. The writer would judge that it arrived nearer to June 1 than to May 1. From the mink that were palpated it appeared that a certain percentage had become pregnant but the kits were dead. This is an interesting observation in view of the fact that this herd seems to have had a light dose of diethylstilbestrol and that intermittently. Under such conditions it looks as though fertilization takes place, implantation follows, but the kits die before birth. It has not been proved that diethylstilbestrol will cause mink kits to die before birth but this is indicated by the high percentage of females receiving chicken waste from caponettes that become pregnant only to resorb their young. In sizable dosages the hormone affects the growing follicle but at a low rate of administration the follicle is not damaged to such an extent that ovulation is impossible but, nevertheless, no kits are born because the egg, though fertilized does not develop to term. The possibility that resorption was caused by a direct effect of the hormone on the embryo or placenta cannot be overlooked, but direct evidence that it affects either the embryo or the placenta is lacking.

Another deduction that can be made from the experience on this ranch is that at low levels of feeding kept low more by the fact that the hormone was fed only periodically than by dilution does not sterilize all the males all of the time. Otherwise it would be difficult to explain how so many of the females became pregnant even though they were not able to carry kits through to birth.

Disastrous as the feeding of diethylstilbestrol is to current production the one ray of hope to the rancher who has suffered is the fact that many of his breeding animals will produce if kept over to the next breeding season. Several ranchers have kept over mink that failed to breed after feeding poultry waste suspected of containing material from caponettes. On one farm of 16 females that had borne litters before they were fed the hormone, 9 produced litters while 19 females fed the stuff when they were kits produced only 6 litters. This is in keeping with histological observations made on ovaries secured at pelting time which indicated that some of the ovaries of some of the kits appeared to be injured beyond regeneration. On another farm 80 litters were produced by 121 females but

these were not classified into adult and kit females. Apparently the Aleutians are hit harder than other mink but because of the small numbers involved it is not safe to say that this is due to the same factor or factors that had caused the trouble originally.

Males as well as females may return to normal breeding condition after the feeding. Apparently the percentage of sterility is not much higher than that found among untreated males.

The feeding of poultry waste containing diethylstilbestrol has other interesting physiological results but these will not be discussed here.

Mr. PARKHILL. These are considered opinions—of course we can't identify the instances mentioned by Dr. Enders but we think the instances he gives of recovery are not representative.

I should like at this time to read the affidavits of two mink ranchers who were injured in 1949 and whose mink were examined and inspected by Dr. Enders. The first is that of Frederick W. Kjaer, whose affidavit reads as follows. The Bassett letters and Dr. Fladness' letter were previously read in evidence.

(The affidavit of Frederick W. Kjaer was marked "Exhibit No. 37," received in evidence, and made a part of the record.)

Mr. PARKHILL. Mr. Kjaer's affidavit reads as follows [reading]:

AFFIDAVIT

STATE OF NEW YORK,
County of Suffolk, ss:

Frederick Kjaer, being duly sworn upon his oath, deposes and says as follows:

My name is Frederick Kjaer. I am a mink rancher, living at Smithtown, Long Island, N. Y. I have knowledge of the facts and am executing this affidavit in support of H. R. 846, a bill for the relief of Henry J. Krueger.

Following a recommendation by the United States Department of Agriculture which came to my attention in November 1948, I began including chicken waste, composed in part of chicken heads, as a part of the diet fed to my mink. On January 5, 1949, I wrote to Mr. Charles F. Bassett, Director of the United States Fur Animal Experiment Station at Saratoga Springs, N. Y., inquiring, among other things, about the matter of feeding chicken waste to mink. I did not retain a copy of my letter. However, I received an answer from Mr. Bassett, dated January 17, 1949, a copy of which is marked "Exhibit A," attached hereto, incorporated herein by reference, and made a part of this affidavit.

Early in 1949 seven male mink and one female died, which was an unprecedented mortality from my experience.

Breeding in March of 1949 was very hard. The males tried to work, but none of them could. I borrowed seven proven males from other ranchers and endeavored to breed my 60 female mink. Not a single one of the 60 females produced a single kit.

On March 15, 1949, I again wrote Mr. Bassett, advising him of the difficulty in breeding that was being encountered on my ranch. I did not retain a copy of my letter. However, Mr. Bassett on March 17, 1949, answered my letter, a copy of which is marked "Exhibit B," attached hereto, incorporated herein by reference, and made a part of this affidavit.

On April 6, 1949, I wrote Dr. Seibold, of the Bureau of Animal Industry, in regard to one of my minks which had died and its carcass forwarded by me to the Bureau for laboratory examination. I did not retain a copy of my letter, but in it I reported to him the difficulty in breeding encountered on my ranch. My letter was answered on April 26, 1949, by S. O. Fladness, Acting Chief of the Bureau, a copy of his letter being marked "Exhibit C," attached hereto, incorporated herein by reference, and made a part of this affidavit.

In June 1949, after no kits had been produced in the whelping season in May, I investigated, and for the first time learned that the chicken waste I had been feeding was from chickens doped with diethylstilbestrol, and I learned from Dr. Hilbert, of the Farmingdale Agricultural Institute, that it was the diethylstil-

bestrol that caused the breeding failure. I, therefore, immediately discontinued feeding chicken waste.

In the fall Dr. Robert K. Enders visited my ranch and examined my mink. They were hairless, of poor color, and generally in poor pelting condition. He advised me that the effects of the drug would be only temporary, so I pelted the poorest stock and kept and endeavored to breed in the 1950 season 33 of the old females. I purchased five new males and kept what I considered to be the best of the drugged ones. In the breeding season in March 1950 breeding was again hard. The new males could all work, but were not interested in the females. A few of my old males worked, but only one sired a litter.

Fifteen of the retained females were adults in 1949; of these, one would not breed and five produced no kits. Of the remaining nine, one lost her litter immediately after birth because of a lack of milk as a result of the effects of the drug. The remaining eight litters were as follows:

Litter	Male	Female	Litter	Male	Female
1	4	0	5	2	2
2	2	1	6	2	0
3	0	4	7	1	1
4	0	2	8	1	5

Fifteen of the retained females were adults in 1949; of these, one would not breed and five produced no kits. Of the remaining nine, one lost her litter immediately after birth because of a lack of milk as a result of the effects of the drug. The remaining eight litters were as follows:

Litter	Male	Female	Litter	Male	Female
1	4	0	5	2	2
2	2	1	6	2	0
3	0	4	7	1	1
4	0	2	8	1	5

Since good brood females produce litters of four or more kits, all females producing less than four being pelted, these adult mink should normally produce litters of at least four. Litters No. 2, 4, 6, and 7 were therefore abnormally low, so that only 4 out of the 15 adults retained are to be classed as good breeding stock following the effects of the drug.

The other 18 retained females had been kits in 1949. Of these, 1 did not breed and 4 produced no kits. Of the remaining 13, 8 lost litters after birth because of the lack of milk caused by the effects of the drug. The remaining 5 litters were as follows:

Litter	Males	Females	Litter	Males	Females
1	2	1	4	1	1
2	2	2	5	1	5
3	2	0			

Thus, out of the 18 kits bred, only two are to be classed as good breeding stock following the effects of the drug.

The kits produced in 1950 are in good pelt condition, but I have no information as to whether or not it would be safe to keep any of them for breeding stock.

FREDERICK W. KJAER.

Subscribed and sworn to before me this 26th day of February, A. D. 1951.

EVA SCHECHTER,
Notary Public, State of New York.

Commission expires March 30, 1952.

UNITED STATES DEPARTMENT OF AGRICULTURE,
AGRICULTURAL RESEARCH ADMINISTRATION,
BUREAU OF ANIMAL INDUSTRY,
LOCAL OFFICE, UNITED STATES FUR ANIMAL EXPERIMENT STATION,
Saratoga Springs, N. Y., January 17, 1949.

Mr. FREDERICK KJAER,
Croft Lane, Smithtown, N. Y.

DEAR MR. KJAER: Your letter of January 5 has just been received.

No one knows whether or not it is absolutely necessary to cook poultry waste to avoid various forms of food poisoning. Most authorities in the past have claimed that such a procedure was absolutely necessary, but there is some question being raised now as to whether or not this is true. I would suggest that you reject any material in which decomposition has started, and that if you wish to play absolutely safe that you boil the waste you obtain in a kettle for 30 minutes, or if you have facilities for cooking under pressure, heat it at 15 pounds pressure for 15 minutes.

We have conducted some minor tests to determine whether the cooking of poultry waste is necessary, and our work to date suggests that there is little difference between the results of the cooked and the uncooked waste, as far as the health of the animals is concerned. Cooking, of course, requires more labor, results in a product that is not quite so palatable to the mink, and decreases to some extent the digestibility of the nutrients present. However, because of the fact that we have, on one or two occasions, lost two or three mink from an as yet unidentified cause, we believe that until more is known that one should play safe and cook the poultry waste.

Our procedure in processing this material has been to remove the gizzard linings and contents and any metal or celluloid leg bands from the legs in order to avoid injury to the grinder. Such gall bladders as may be present occur in such small amounts that it would be unnecessary to remove them.

At one time there was a Farmers' Bulletin on diseases of fur bearing animals. This bulletin is now out of circulation, but it is my understanding that it is being revised and will appear again some time in the very near future. Neither do we have any leaflets or bulletins on the genetics of mink breeding. Most of the information in this respect you will have to obtain from the trade papers, although there is a special bulletin which was published in December 1946 by the Agricultural Experiment Station, University of Wisconsin, Madison, Wis. I would suggest that you write to Dr. Richard M. Shackelford at the above address, asking if any more of these bulletins are available for distribution.

Very truly yours,

CHARLES F. BASSETT, *Director.*

UNITED STATES DEPARTMENT OF AGRICULTURE,
AGRICULTURAL RESEARCH ADMINISTRATION,
BUREAU OF ANIMAL INDUSTRY,
LOCAL OFFICE, UNITED STATES FUR ANIMAL EXPERIMENT STATION,
Saratoga Springs, N. Y., March 17, 1949.

Mr. FREDERICK KJAER,
Box 82, Smithtown, N. Y.

DEAR MR. KJAER: Your letter of March 15 has been received.

I am sorry that we have no information that will help in correcting the condition you have described as occurring among your mink. I would surmise from the information that you have included in your letter that your males are too fat, for one thing, and that this may be one cause of their inactivity.

Glancing through your ration, I am impressed by the tremendously high amount of protein that you are including in your feed, particularly the chicken waste and ocean fish. While it is true that the cereal you use only runs about 12 percent protein, you are including yeast, alfalfa meal, and dried tomato pulp, which I believe you will find also in the cereal you feed, and in addition you are including bonemeal, which is unnecessary in view of the large amount of bone present in both the fish and the chicken heads. It is true that you have since discontinued the bonemeal, but its addition at that particular time was unnecessary, although I do not think it was primarily responsible for the difficulty encountered.

For some time I have had a theory, which as yet I have been unable to prove, that under some conditions urinary calculi or bladder stones may be caused by feeding a very high meat diet. Certain it is that where we are plagued with

large numbers of animals afflicted with bladder stones several years ago, I cannot recall a single instance that has occurred in the last 5 years, during which time we have fed, as a general rule, 50 percent meat and meat products, or less.

I do not know of anything that you can do at present to remedy the situation as far as those animals now affected are concerned. I would try to cut down on the chicken heads and flounders so that, together, they did not constitute more than 40 pounds in every 100 pounds of the diet you feed, and I would attempt to include from 5 to 10 percent fresh or fresh frozen liver from now until the kits are weaned. Livermeal or the powdered liver to which you refer undoubtedly has most of the minerals present that are found in fresh liver, but in the manufacturing process I think a considerable amount of the vitamins are destroyed. Liver is a particularly rich source of folic acid, one of the B vitamins which workers at the University of Wisconsin have shown is vitally necessary for the health and well-being of mink. I believe it is no exaggeration to say that mink are known to require relatively more of this particular vitamin than any of the other species with which I am familiar.

Let me suggest that you consider the following two recommendations: First, reduce your meat and step up the fresh liver, as indicated previously; second, cut down on your feed until these animals are in good breeding condition. This can be done by omitting one feeding per day, if you feed twice daily, or by cutting the amount of feed they are now getting, in half. The reduction in food allowed will cause a much greater activity on the part of the mink, which, in turn, will have a tendency to cut down considerably on the fat they are now carrying. Admittedly these two recommendations are shots in the dark, because it is difficult to know just what factor or factors may be responsible for your trouble.

We do not conduct autopsies of animals here at the station. I would suggest if an animal dies that you wished posted, that you freeze it, pack it in dry ice, and ship it to Dr. Siebold, Pathological Division, Bureau of Animal Industry, Agricultural Research Administration, Washington 25, D. C., arranging so that the package will arrive at his office on any day, Monday through Friday. You must be careful to plan such a shipment so that it arrives in Washington in the quickest possible time.

Very truly yours,

CHARLES F. BASSETT, *Director.*

Mr. PARKHILL. Now, I have the affidavit of Howard Kirsch, which I offer as exhibit No. 38.

(The affidavit of Howard Kirsch was marked "Exhibit No. 38," received in evidence, and made a part of the record.)

Mr. PARKHILL. Mr. Kirsch's affidavit reads as follows [reading]:

STATE OF NEW YORK,
County of Nassau, ss:

AFFIDAVIT

Howard Kirsch, being duly sworn upon his oath, deposes and says as follows:

My name is Howard Kirsch. I live at Hempstead, N. Y. I operate and for many years have operated a mink ranch at Hempstead, N. Y. I have knowledge of the facts and execute this affidavit in support of H. R. 846, a bill for the relief of Henry J. Krueger.

Previous to the March 1949 breeding season, I was feeding my mink chicken waste upon the recommendation of the Department of Agriculture. Following the breeding season in 1949, eight of my female mink had false pregnancies, hemorrhaged, and bled to death. Moreover, out of 163 bred females 160 produced no kits.

About May 10, 1949, I submitted my problem to Dr. Hilbert, of Farmingdale Agricultural Institute, immediately after discovering that the chicken waste I had been purchasing and feeding was from chickens doped with a drug called diethylstilbestrol. Dr. Hilbert advised me that all of my troubles were attributable to this drug, which accounted for the death of the eight females and the failure of the others to produce kits. I immediately stopped feeding chicken waste.

In November, Dr. Robert K. Enders, of the Department of Agriculture, examined my animals. He said that the effects of the drug were only temporary and so I did not pelt off the damaged mink, but retained 120 of the females to breed in 1950. Of this number, 56 were adults in 1949 and the remaining 64 were kits. I had no trouble with the males working in either 1949 or 1950.

In 1950, of the 56 retained adult females, 7 would not breed, 4 died with kits, 18 lost litters right after birth for want of milk due to the effects of the drug, and 19 produced no kits. The remaining 18 litters were as follows:

Litter	Males	Females	Litter	Males	Females	Litter	Males	Females
1	4	2	7	1	1	13	3	0
2	2	3	8	3	2	14	0	1
3	1	5	9	4	0	15	1	5
4	0	4	10	2	2	16	0	1
5	3	1	11	2	2	17	1	1
6	3	0	12	1	1	18	2	2

Since to be qualified as breeding stock, female mink must produce litters of four or more, all of these females should have produced litters of four or more. However, litters Nos. 6, 7, 12, 13, 14, 16, and 17 were abnormally low, indicating that the breeding characteristics of these animals had been damaged by the effects of the drug. Therefore, only 11 out of 56 female adults can be classed as good breeding stock following the consumption of the chicken heads containing diethylstilbestrol.

Of the 64 retained females which had been kits in 1949, 13 lost litters right after birth for want of milk due to the effects of the drug, 18 produced no kits, and 33 had litters as follows:

Litter	Males	Females	Litter	Males	Females	Litter	Males	Females
1	0	2	12	2	3	23	2	4
2	0	2	13	3	2	24	2	3
3	2	2	14	1	2	25	2	3
4	3	2	15	0	2	26	0	3
5	3	2	16	1	1	27	4	1
6	2	4	17	1	4	28	4	2
7	1	7	18	1	4	29	2	3
8	3	1	19	3	2	30	1	2
9	4	2	20	3	2	31	4	1
10	1	2	21	2	1	32	2	1
11	3	0	22	3	3	33	2	2

Therefore, out of 64 kits bred in 1950 only 24 are to be classed as good breeding stock following the effects of the drug.

HOWARD J. KIRSCH.

Subscribed and sworn to before me this 27th day of February A. D. 1951.

EDWIN C. ETZEL,
Notary Public, State of New York, residing in Nassau County.
Commission expires March 30, 1951.

Mr. PARKHILL. Next I should like to introduce the October 1950 issue of the American Fur Breeder, where, at page 17, is an article by Dr. W. L. Roberts, of Federal Foods, Inc., Thiensville, Wis., under the title "What Happens When Pellet-Inserted Chicken Heads Are Fed," and in this article Dr. Roberts describes what is, so far as I know, the only controlled experiment that had been made of the kind Dr. Byerly was talking about this morning, in the feeding of diethylstilbestrol to mink to simulate the conditions that exist when they are eating the doped chicken heads. I will just read three short paragraphs [reading]:

WHAT HAPPENS WHEN PELLET-INSERTED CHICKEN HEADS ARE FED?

* * * Beginning March 17 (a few days before breeding) each of the four females received 150 gamma 0.00007 percent diethylstilbestrol daily (1 gamma equals one-millionth of 1 gram). Each of the females came from a different litter, and each was bred by a different male. The females bred readily. None of the females produced kits. All males used for breeding these females produced young via other females fed the same food, containing no diethylstilbestrol.

Litter-mate females of the females fed diethylstilbestrol produced kits. * * * This test proves that diethylstilbestrol at a 150-gamma-per-day level will prevent female mink from producing young. It is assumed that much smaller levels would also prevent reproduction. * * *

Since 150 gamma per day caused loss of hair, drastic reduction in food consumption, inactivity, excessive fatness, and sterility, it is reasonable to assume that the ration that caused disasters in 1950 contained much lower levels of diethylstilbestrol; because these mink, that failed to produce young, did not show such visible symptoms as loss of hair. * * *

I offer this magazine containing that article as exhibit No. 39.

(The magazine referred to was marked "Exhibit No. 39," received in evidence, and made a part of the record.)

Mr. JONAS. Was the gentleman who wrote that article in the employ of the Federal Department?

Mr. PARKHILL. No; he was employed by Federal Foods, Inc.

Mr. JONAS. A private enterprise?

Mr. PARKHILL. Yes, sir.

Mr. JONAS. What are his qualifications?

Dr. BYERLY. He is an excellent man.

Mr. JONAS. He is qualified to testify to the situation?

Dr. BYERLY. He is an excellent man.

Mr. PARKHILL. I would now like to submit the affidavit of Dr. Roland K. Meyer, as exhibit No. 40.

(Affidavit of Dr. Roland K. Meyer was marked "Exhibit No. 40," received in evidence, and made a part of the record.)

AFFIDAVIT

STATE OF WISCONSIN,
County of Dane, ss:

Dr. Roland K. Meyer, being duly sworn upon his oath, deposes and says as follows:

My name is Roland K. Meyer, and I am a professor of zoology at the University of Wisconsin, having held this position since 1938. Prior to that time I was an assistant professor of zoology, University of Wisconsin, from 1935–38. From 1930 to 1932 I was a national research fellow on the staff of the anatomy department, medical school, University of Rochester, Rochester, N. Y. In 1933 I had a special fellowship in the anatomy department at Rochester. In 1933–35 I was on the research staff of the Upjohn Co. of Kalamazoo, Mich. My field of research and teaching has been embryology and endocrinology, particularly in the field of endocrinology of reproduction. In my present position I teach embryology and endocrinology, do research, and supervise the research work of approximately 30 graduate students in the field of endocrinology.

I have made or supervised numerous experiments with the synthetic hormone diethylstilbestrol especially as related to power of this substance to cause atrophy of the male and female gonads in laboratory animals, and to the mechanism of its action on the gonads.

Diethylstilbestrol, or stilbestrol for short, is an estrogenic synthetic hormone whose action is similar to that of the natural hormone estrone, or estradiol, which is normally produced by the ovaries and which induces the occurrence of estrum or heat in the female. However, it is considerably more potent than the natural hormone as well as cheaper. It can also be administered orally, or it may be injected subcutaneously. Because of the general heat stability of hormones of this type, I am of the opinion that cooking will not destroy its effects.

The effects of the administration of stilbestrol are essentially the same in the animals in which it has been studied. In addition to inducing heat, its tendency is to depress the ovary and thus to inhibit ovulation, so that pregnancy cannot occur. When administered to male animals it causes the testes to atrophy. From my observations it causes an atrophy and nonfunction of the ovaries or testes of animals to which it has been administered, if the dose is large enough.

I have dissected and examined female mink fed the comparatively small dosage of diethylstilbestrol of 0.15 milligram per day for 82 days before slaugh-

tering. The condition of the mink, and particularly of their ovaries, was consistent with and similar to that of the other female animals administered stilbestrol which I have examined. I am of the opinion that the ingestion by mink of 0.15 milligram of stilbestrol daily immediately before or during the breeding season would definitely inhibit the reproductive ability of the animals.

ROLAND K. MEYER.

Subscribed and sworn to before me this 27th day of February A. D. 1951.

[SEAL] BEATRICE SELLERY,
Notary Public, Dane County, Wis.

Mr. JONAS. Dr. Byerly, who was the previous man who wrote that article?

Dr. BYERLY. Dr. Roberts.

Mr. JONAS. Could you for the record state some of his qualifications?

Dr. BYERLY. Dr. Roberts has been a consultant and I believe a pioneer in Federal Foods, Inc., in Wisconsin, for a number of years. His qualifications with respect to mink feeding are unchallenged. He is accepted by everyone and we have reason to believe that he is highly competent.

Mr. JONAS. What school did he graduate from?

Dr. BYERLY. I do not know, but I can find out for the record.

Mr. JONAS. What degrees does he hold?

Dr. BYERLY. He is a Ph. D.

Mr. JONAS. All right, Mr. Parkhill.

Mr. PARKHILL. Now, I should like to introduce at this time three advertising folders issued by two different companies that manufacture the diethylstilbestrol pellets. I think these pamphlets will be of interest to the committee. They establish what is in the pellets—what the drug is. They show that there is a residue present when bird is slaughtered; they show that that residue is in the neck, or likely to be; they show how the thing is injected; they show by figures how it is used; they state:

Capette pellets implanted in male birds chemically inhibit male characteristics and produce caponlike appearance and quality. They assume some of the outward appearance of females. In cocks, the crowing, fighting, and maleness lessen and disappear; the comb and wattles regress and become pale. The testes shrink and degenerate temporarily. After the pellet is absorbed (about 9 weeks) the functioning of the testes is regained. In young cockerels 6 to 10 weeks of age the pellets cause the birds to look and act like pullets. The most startling change in young cockerels will be evidenced in the dressed bird, due to the broadened breast and even fat distribution.

The gain in weight of birds treated with Capette pellets will vary from ¼ to 1 pound, depending on the breed, food, raising conditions, and the age of the bird when treated. Weight comparison should always be made on dressed birds, since the ratio of dressed weight to live weight greatly favors the treated birds.

Then they go on and give suggested uses of Capette pellets and give detailed directions for using. They tell when they should be administered and discuss possible physiological effects of Capette pellets on chickens or humans, and in regard to this they say:

The small amount of estrogen (diethylstilbestrol) found in the flesh of the bird at any time after the implantation is not harmful to the consumer. However, it is essential that the pellet be implanted near the comb so that any pellet residue will be discarded with the head. Capette pellets should not be confused in any way with estrogenic products used experimentally in some poultry research centers and involving estrogens not accepted for public use in chickens.

They recommend the use of these pellets for chickens and turkeys, and give considerable information in regard to the commercial application of the drug.

I would like to have these marked for identification as "Exhibits 41, 42, and 43."

Nos. 41 and 42 are issued by Wick & Fry, Inc., of Cumberland, Ind., and its sole distributor is the Anderson Box Co., of Indianapolis, who describe their product, which they call Capette pellets.

The other pamphlet is issued by the Vineland Poultry Laboratories, of Vineland, N. J., and they describe what they call "Vineland Tenderettes," under that trade name, manufactured by a different company.

I think I have sufficiently indicated the pertinent parts of these.

(The documents referred to were thereupon marked, respectively, "Exhibits Nos. 41, 42, and 43," were received in evidence, and were made a part of the record.)

Mr. JONAS. I made a note this morning and will ask this: Is there any way of determining how much of a pellet remains in a chicken head at the time of slaughtering? In other words, you insert a certain number of grams in the chicken head; how many grams of the drug are unabsorbed at the time of slaughtering?

Mr. PARKHILL. Fifteen milligrams go in, Judge, and I think it is only fair to answer your question by saying that nobody can determine just what the residue will be in any particular instance. I gave you the figures this morning of experiments of Dr. Lorenz. He found that where 25 milligrams were implanted about one-half was absorbed in 4 weeks. However, there may be other factors involved, other than the time element. I think Dr. Byerly, who is an expert in the poultry field, can answer the question better than I can.

Dr. BYERLY. Biological assays are made with rats and mice, which are not exactly comparable. There have been biological assays made, and I think not more than 5 milligrams have been found or reported in any case, after 4 weeks, and usually it is a much smaller amount.

Mr. JONAS. How long a period of time do you require to elapse before the chicken is ready to be slaughtered for the market?

Dr. BYERLY. It is usually 4 to 6 weeks, from the standpoint of profit, and sometimes as long as 8 weeks.

Mr. JONAS. Let us take a maximum of 6 weeks. Can we agree for the record that if you leave a pellet in a chicken's head a maximum of 6 weeks there still is some unabsorbed portion of that pellet remaining in the chicken's head?

Dr. BYERLY. Yes, sir; but we would have to guess as to the amount. My guess would be there might be as much as 10 percent residuum. That is a pure guess.

Mr. JONAS. That is your best judgment?

Dr. BYERLY. Correct.

Mr. PARKHILL. I should now like to introduce a letter from Wick & Fry, the manufacturer of the Capette pellets, addressed to the Trabert Mink Ranch, Elgin, Ill. I shall only refer to one short paragraph of it here, in regard to the effect upon mink.

(The document referred to was thereupon marked "Exhibit No. 44," received in evidence, and made a part of the record.)

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Wick & Fry, the manufacturers, say there is definite danger of sterilizing both animals, male and female, if fed an amount of the heads that have been removed from treated birds, because, though the amount in each head would probably be quite small, the concentrated amount in a number of heads would be sufficient to cause at least temporary sterility, though they should revert to normal after the effects did wear off.

That latter conclusion, we contend, is a mistaken one; but in the same letter, however, they do admit that in its application to birds, the birds sometimes do not lose the effect entirely, and in those individuals normal activity is not completely regained.

Mr. JONAS. While we are discussing this subject, it is not quite clear to me how you process this mink food. After the chickens are slaughtered, do you take the raw product and send it to a refinery, or what is done?

Dr. BYERLY. These chickens pass through normal channels of trade. Now, they have to go through a plant in order to justify the expense. They are handled in the normal channels of trade. The job is the implantation of the pellet in a portion of the anatomy of the bird not normally eaten by humans. It is high enough in the head so that a small portion of the neck goes with the head, and there is, in our opinion, very little danger of any of the residuum of the pellet passing into human consumption.

Mr. JONAS. All right. We have eliminated the possibility that there will be a detrimental effect on humans. But after the head is removed from the marketable part of the chicken, what do you do with it, in its raw state? What is done with it then?

Dr. BYERLY. Most of these, I think, would find their way into butcher-shop scrap, which is collected variously for garbage, for feeding of hogs, and for other fattening purposes. Some of it, I suppose, would go into the garbage, household garbage, which normally does not go into feeding channels at all.

Mr. JONAS. Is it processed with heat, or do you use it in its raw state? Do you take it in its raw state directly from the butcher's market direct to the mink without other processing?

Dr. BYERLY. Some mink ranchers cook it but most of them, I believe, obtain a supply of fresh and uncooked chicken waste, enough to last several days or a week, and they feed it raw.

Mr. PARKHILL. It is ground first. They obtain it from the chicken dressers, the chicken processors. I am probably more familiar with it, in that we have enormous hatcheries that furnish the birds to the farmers who raise the chickens. The farmer generally sells his chickens to the chicken dresser and the chicken dresser will eviscerate the birds, and then the chicken waste is sold to the mink ranchers, who, in turn, will clean the heads and feet, removing the bills and claws, and celluloid and metal leg bands. The ranchers have tremendous lockers, where they keep this stuff until it comes time for mixing a batch of food, which requires so many pounds of chicken waste to so much of other things. Then all those things are mixed together, and then that is fed to the mink. That is the general practice as I am familiar with it.

Dr. BYERLY. We have had some direct experience in the past few months. As a matter of fact, with the cooperation of several agencies,

we have gone to a great deal of trouble to get an amount of caponette offal of known history, and we have had a real problem in getting as much as 200 pounds, and we are currently trying to get 200 pounds more of caponette waste. It is not easy to find caponette waste of known origin, of 100 percent caponette waste.

Conversely, in this area, where many chickens are to be found, it is difficult to find 200 pounds of waste where young chickens are slaughtered that could be guaranteed free of caponettes. You would have to know the farm of origin from which the chickens came. Then, too, it is very difficult to recognize the head. Some of them you might recognize, and some you could identify, and then others you could not identify the point of injection.

I emphasize that it is hard to say that this waste material came from caponettes unless you know those chickens came from this farm and that this farm did during a certain period use the pellets and produced caponettes.

Mr. PARKHILL. What you are saying, Doctor, is that it is hard to find chicken waste that came solely from doped chickens.

Dr. BYERLY. On demonstrated problems, you have to know all these data.

Mr. JONAS. Have you ever carried on any experiments that would tend to show that the effectiveness of diethylstilbestrol was destroyed by freezing or heating? In other words, does freezing have a tendency to destroy the drug or render it harmless when taken by animals?

Dr. BYERLY. Dr. Meyer has issued a statement that it was heat stable and we would not anticipate any material change if it were heated.

Mr. JONAS. Then, apparently, if you put it through a freezing process or a heating process, it will not be destroyed.

Dr. BYERLY. I think, barring extreme treatment, that would be correct.

Mr. JONAS. All right. Go right ahead.

Mr. PARKHILL. I would next like to offer in evidence, as exhibit No. 45, the affidavit of Henry Marlowe, of Huntley, Ill., which reads as follows (reading):

(The document referred to was thereupon marked "Exhibit No. 45," received in evidence, and made a part of the record.)

STATE OF ILLINOIS,
County of McHenry, ss:

Henry Marlowe, being duly sworn upon his oath, deposes and says as follows: My name is Henry Marlowe. I reside at Huntley, Ill. I own and operate there a chicken hatchery and also a farm where the chickens are taken for finishing when they are 4 weeks old.

On September 14, 1949, I purchased from Anderson Box Co., of Indianapolis, Ind., 1,000 diethylstilbestrol pellets sold under the trade name of Capettes and manufactured by Wick & Fry of Cumberland, Ind. I later purchased an additional 28,000 identical pellets; of this number 10,000 were delivered to the farm on November 25, 1949; 9,900, on November 29, 1949, and 8,000, on April 6, 1950. All of these pellets were implanted in chickens taken to the farm from the hatchery beginning right after the delivery of the pellets to the farm. The chickens were implanted with the pellets at approximately 5 weeks of age and the average slaughtering age was 13 weeks. After the 19,900 pellets taken to the farm in November were exhausted no more chickens were implanted until April 6, 1950.

The number of birds delivered to the chicken farm from the hatchery after the purchase of the first pellets until the end of May and the dates when they were delivered are as follows:

Oct. 24, 1949	2,550	Feb. 8, 1950	560
Nov. 5, 1949	5,280	Feb. 28, 1950	4,130
Nov. 14, 1949	2,750	Mar. 9, 1950	1,200
Nov. 26, 1949	3,065	Apr. 12, 1950	1,605
Dec. 12, 1949	2,000	Apr. 15, 1950	965
Dec. 20, 1949	1,800	Apr. 19, 1950	1,850
Dec. 31, 1949	1,748	Apr. 22, 1950	2,560
Jan. 7, 1950	3,120	Apr. 29, 1950	380
Jan. 14, 1950	3,255	May 6, 1950	840
Jan. 20, 1950	125	May 12, 1950	660
Feb. 11, 1950	1,900		

Commencing on December 3, 1949, I sold chickens from the farm to Donald Baier, of Dundee, Ill., in the number and on the dates as follows:

Dec. 3, 1949	250	Feb. 7, 1950	1,075
Dec. 9, 1949	500	Feb. 20, 1950	2,683
Dec. 19, 1949	540	Mar. 8, 1950	1,015
Dec. 20, 1949	1,340	Apr. 21, 1950	1,200
Jan. 23, 1950	480	May 15, 1950	800
Feb. 2, 1950	964	May 25, 1950	212

Commencing on December 16, 1949, I sold chickens from the farm to Glenn Hamm, of Elgin, Ill., in the number and on dates as follows:

Dec. 16, 1949	560	Feb. —, 1950	262
Dec. 19, 1949	310	Mar. —, 1950	150
Dec. 27, 1949	711	Mar. —, 1950	568
Dec. 29, 1949	1,014	Mar. —, 1950	1,024
Jan. 4, 1950	1,725	Mar. —, 1950	225
Jan. 10, 1950	1,872	Mar. —, 1950	400
Feb. 10, 1950	250	Apr. 7, 1950	964
Feb. —, 1950	800	Apr. 21, 1950	270
Feb. —, 1950	312		

HENRY MARLOWE.

Subscribed and sworn to before me this 26th day of February A. D. 1951.

MILDRED ANDERSON,
Notary Public.

Dr. BYERLY. What is the total number of chickens raised? Does it correspond with the 29,000 pellets?

Mr. PARKHILL. My understanding is that they treated all chickens except there was a little gap at the beginning.

Dr. BYERLY. Then——

Mr. JONAS. It involved approximately 29,000 chickens.

Mr. PARKHILL. There were slightly over. What happened was this: If I may suggest making an analysis of this thing, about 30 percent, perhaps, of a lot, on October 24, 1949, were implanted, and then there were none implanted until a group that were on the farm on the 25th, which had been brought there at 4 weeks of age, on November 14. Subsequently, all were implanted, or substantially all of them. Certainly all of them for a period of time well into March—in other words, the birds in which we are interested. So, as a practical matter, you will find from these figures they implanted all of his birds.

Mr. JONAS. What is the probative value of that? What do you intend to show by those figures?

Mr. PARKHILL. Mr. Marlowe is the man who doped the chickens whose heads were fed to Henry Krueger's mink. This is the start of the chain.

Mr. JONAS. This is the source from which started all of the evil, as it traveled along?

Mr. PARKHILL. This is the start of the chain that got the drug into the mink.

Next, I would like to read the affidavit of Donald Baier, of Dundee, Ill.

I would like to have this marked "Exhibit No. 46."

(The document referred to was thereupon marked "Exhibit No. 46," received in evidence, and made a part of the record.)

Mr. PARKHILL. The affidavit of Mr. Baier reads as follows [reading]:

AFFIDAVIT

STATE OF ILLINOIS,
County of Kane, ss:

Donald Baier, being duly sworn upon his oath, deposes and says as follows:

My name is Donald Baier. I reside at Dundee, Ill., and operate a poultry-dressing plant there.

During the period from December 1, 1949, to June 1, 1950, I purchased and slaughtered chickens upon some 15 different dates from the farm of Henry Marlowe, at Huntley, Ill. During the above period I purchased from Mr. Marlowe approximately 14,000 chickens. All were slaughtered within 3 days of purchase. Approximately 70 percent of the chickens purchased from Mr. Marlowe, together with chickens purchased from others, were eviscerated and the heads and feet sold to George Postma on Schaumberg Road, near Elgin, Ill.

During the above period, George Postma purchased all the chicken waste (heads and feet) from my plant immediately after the birds were eviscerated and this included all chickens purchased from Mr. Marlowe and eviscerated.

DONALD BAIER.

Subscribed and sworn to before me this 26th day of February A. D. 1951.

WILLIAM A. LAMZ, *Notary Public.*

Mr. PARKHILL. Next, I have the affidavit of George Postma.

Dr. BYERLY. How many chickens did Mr. Baier handle?

Mr. PARKHILL. Mr. Baier said that 25 percent were from Mr. Marlowe's.

In other words, Mr. Chairman, 25 percent of the chicken heads that were in this chicken waste that was fed to Mr. Krueger's mink, that is, doped chicken heads, came from Mr. Marlowe's farm and 75 percent of the chicken heads came from other sources.

I would like Mr. Postma's affidavit to be marked "Exhibit No. 47."

(The document referred to was thereupon marked "Exhibit No. 47," received in evidence, and made a part of the record.)

Mr. PARKHILL. Mr. Postma's affidavit reads as follows [reading]:

STATE OF ILLINOIS,
County of Cook, ss:

AFFIDAVIT

George Postma, being duly sworn upon his oath, deposes and says as follows:

My name is George Postma. I am a mink rancher residing on Schaumberg Road near Route 59 in Cook County, Ill. I am acquainted with the facts hereinafter stated and am making this affidavit in support of H. R. 846, a bill for the relief of Henry J. Krueger.

Shortly after reading an article in the November 1948 issue of American Fur Breeder in regard to the feeding of poultry waste to mink, I began purchasing chicken waste from Donald Baier of Dundee, Ill., and including such chicken waste as approximately 30 percent of the diet fed my mink. This chicken waste consisted of heads and feet only and no viscera, and ran on the average of two and a half chicken heads per pound of waste.

Between December 3, 1949, and May 28, 1950, I purchased a total of 15,741 pounds of chicken waste (heads and feet) from Mr. Baier. During this period, I was hauling the chicken waste from Mr. Baier's dressing plant 5 days a week (Tuesday through Saturday) and was purchasing all of his chicken waste. Between these dates I made two sales of chicken waste to Henry J. Krueger, of Elgin, Ill., one on December 19, 1949, consisting of 1,560 pounds, and one on January 23, 1950, consisting of 1,000 pounds. All of this waste was obtained from Mr. Baier within the preceding 2 or 3 weeks, had been promptly frozen after obtaining it from him, and was in good condition at the time it was sold and delivered to Mr. Krueger.

This was the same chicken waste that I was incorporating in the diet of my own mink and which caused their sterilization.

GEORGE POSTMA.

Subscribed and sworn to before me this 28th day of February, A. D. 1951.

ELIZABETH A. ALCOTT,
Notary Public.

Mr. PARKHILL. I have, now, the affidavit of Walter T. Graf, which I wish to have marked "Exhibit No. 48."

(The document referred to was thereupon marked "Exhibit No. 48," received in evidence, and made a part of the record.)

Mr. PARKHILL. The affidavit reads as follows [reading].

STATE OF ILLINOIS,
County of Cook, ss:

AFFIDAVIT

Walter T. Graf, being duly sworn upon his oath, deposes and says as follows:

My name is Walter T. Graf. I reside in Chicago, Ill. I am president of the Graf Fur Co., Inc., at Chicago, Ill. For 36 years I have been in the fur business and I have been in the business of buying and selling mink-breeding stock for the past 16 years. I am thoroughly familiar with the fair-market value of mink-breeding stock during the year 1950.

In the year 1948 and again in 1949 I inspected and graded as to quality all of the live mink on the ranch of Henry J. Krueger at Elgin, Ill., and I know the condition and quality of his breeding stock held over for the 1950 breeding season.

Henry J. Krueger designated for me 88 male and 323 female mink from his ranch which had been injured by the feeding of doped-chicken heads. The fair-market value and therefore the reasonable cost of replacing such mink in the year 1950 was as follows:

Type	Sex	Number	Value	Total
Darks	Male	28	$150	$4,200
Do	Female	120	75	9,000
Pastels	Male	34	200	6,800
Do	Female	106	150	15,900
Pastel Breath of Spring	Male	7	225	1,575
Do	Female	8	150	1,200
Pastel halfblood	do	42	100	4,200
Silverblus	Male	3	150	450
Do	Female	33	75	2,475
Silverblue Breath of Spring	Male	12	200	2,400
Do	Female	7	100	700
Recessive Blufrost	Male	1	50	50
Do	Female	2	35	70
Recessive Blufrost DiHybred	Male	3	50	150
Do	Female	5	35	175
Total:				
Males		88		} 49,345
Females		323		

On the basis of the quality of Mr. Krueger's herd, $175 for males and $100 for females is a fair and reasonable average value for kits of the better type, which would normally be retained from the crop as breeding stock to increase the herd.

WALTER T. GRAF.

Subscribed and sworn to before me this 28th day of February, A. D. 1951.

ELIZABETH A. ALCOTT,
Notary Public.

Mr. PARKHILL. I now come to the affidavit of Henry J. Krueger, the plaintiff in this case, which I would like to have marked "Exhibit No. 49."

(The affidavit was marked "Exhibit No. 49," received in evidence and made a part of the record.)

Mr. PARKHILL. I would like to read Mr. Krueger's affidavit for the record [reading]:

AFFIDAVIT

STATE OF ILLINOIS,
County of Cook, ss:

Henry J. Krueger, being duly sworn upon his oath, deposes and says as follows:

My name is Henry J. Krueger. I am the Henry J. Krueger referred to and claimant in H. R. 846, Eighty-second Congress, first session, and file this affidavit in support of such bill.

I own and operate a mink ranch under the name of Krueger's Mink Ranch, at 1600 Larkin Avenue, in the city of Elgin, county of Kane, and State of Illinois. I have operated that ranch since about the year 1935 and have continuously during the intervening years improved my herd by selective breeding and at the beginning of the 1950 breeding season was feeding 88 males and 335 females, all of the highest quality.

My production records for the years previous to 1946 were destroyed several years ago. The record of production of my mink ranch beginning with the year 1946 and including the years to and including 1950 is as follows:

Year	Male	Female	Bred		Did not breed		Whelped		Bred but did not whelp		One's		Two's	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1946	38	150	144	96	6	4	130	86.7	14	9.3	(?)	(?)	(?)	(?)
1947	71	296	290	97.97	6	2.03	237	80.07	53	17.9	5	2.1	8	3.4
1948	80	314	308	98.1	6	1.9	281	89.6	27	8.6	11	3.9	13	4.6
1949	89	323	310	96.0	13	4.0	249	77.0	61	18.9	10	4.0	20	8.0
1950	88	335	321	95.8	14	3.2	33	9.8	288	86.0	12	36.3	9	27.2

Year	Total kits	Average-size litter	Female increase	Year	Total kits	Average-size litter	Female increase
1946	571	4.4	(?)	1949	1,102	4.8	33
1947	1,229	5.2	146	1950	85	2.6	42
1948	1,444	5.1	33				

A litter of less than four kits is considered subnormal, it being the invariable practice in the mink business to pelt off all females that produce litters of less than four kits. However, for the purposes of this claim, litters of three are taken as being within normal limits. This is reflected in the increase in females shown above. Also, while production records for 1949 fell off slightly from those of previous years, this was due to the extreme heat during whelping time, a condition that did not obtain during 1950.

I have long subscribed to a number of trade magazines, including American Fur Breeder and National Fur News. Shortly after their publication, I read the articles by Charles F. Bassett entitled "The Comparative Value of Poultry

Waste and Horse Meat for Feeding Mink" in the November 1948 issue of American Fur Breeder and "Practical Economics in Feeding Mink Kits" in the July 1949 issue of the National Fur News, in both of which articles Mr. Bassett, who is the director of the United States Fur Animal Experiment Station, Bureau of Animal Industry, Agricultural Research Administration, at Saratoga Springs, N. Y., heartily recommended the feeding of poultry waste as a substitute in part or whole for horse meat in the mink diet. Neither of said articles made any mention of hormones, estrogens, or the drug diethylstilbestrol, or of the commercial preparation of that drug known as capette pellets, and gave no warning of any danger to be run by feeding poultry waste. As a result of the recommendation contained in those articles, I began the feeding of chicken waste to the extent of 10 percent of the diet fed my mink on or about September 20, 1949. The statement in my affidavit filed in support of H. R. 9407 that chicken waste was 5 percent of such diet was made in error, such 5 percent referring to the percent of the diet that was composed of chicken heads in which the drug had been implanted. My feeding records show that 10 percent of the diet was chicken waste, half of it consisting of heads and half of feet, no viscera being included.

Previous to that time, the feed had consisted of 45 percent horse meat, 15 percent tripe, 15 percent fish, 5 percent liver, 5 percent tomatoes, 10 percent cereal, 3 percent vitamin supplement, and 2 percent powdered milk, together with a small quantity of cod-liver oil and wheat-germ oil. Beginning about September 20, 1949, I substituted 35 percent horse meat and 10 percent chicken waste in lieu of the 45 percent horse meat previously included in the diet. Other than for this change, the diet fed the mink was no different than it had been during the previous years. I continued to feed chicken waste in the mink diet until sometime near the end of April 1950. I never heard of the practice of doping poultry with hormones and knew nothing of the danger of feeding waste from such poultry until after the time when I stopped feeding chicken waste to my mink.

I obtained the chicken waste consisting of heads and feet from George Postma of Schaumberg Road near Route 59 in Cook County, Ill., on the following dates and in the following amounts:

	Pounds
Sept. —, 1949	1,020
Sept. 30, 1949	1,950
Dec. 19, 1949	1,560
Jan. 23, 1950	1,000

All but 200 pounds of this chicken waste was incorporated in the mink diet and fed the mink between about September 20, 1949, and the time near the end of April 1950 when I stopped feeding chicken waste.

In the 1950 breeding season, of my 335 female minks, only 33 whelped, producing a total of 85 kits, a ranch average of twenty-four one-hundredths of 1 percent kits per female, whereas my average production theretofore over a period of years had averaged four kits per female in the herd. Normal production in 1950 would have been in excess of 1,400 kits as compared with the 85 actually produced. Moreover, of the females that did whelp, the average litter was only 2.6 kits per litter, whereas my average theretofore had been 4.9 kits per litter. Furthermore, in my previous experience, less than 4 percent of the females that whelped produced litters of only 1 kit, and less than 6 percent produced litters of only 2 kits, whereas, in 1950, 12 of the 33 litters whelped, or 36 percent, consisted of only 1 kit, and 9 of the litters whelped, or 27 percent, consisted of only 2 kits. All of this clearly indicates that even the females that whelped were damaged by the effects of the diethylstilbestrol, which I learned for the first time some time after the whelping season had been contained in the last two loads of chicken waste purchased from George Postma. Upon investigation, I learned that the poultry in question was raised by Henry Marlowe, of Huntley, Ill., who implanted them with diethylstilbestrol pellets called capette pellets, which are manufactured by Wick & Fry of Cumberland, Ind., and distributed by Anderson Box Co., of Indianapolis, Ind., and that Mr. Marlowe sold the poultry to Donald Baier, of Dundee, Ill., who dressed the chickens and sold the waste to George Postma, of Elgin, Ill., who in turn resold the chicken waste to me.

In an article in the July 1950 issue of the Black Fox Magazine and Modern Mink Breeder, entitled "Some Answers to the Problem of Feeding Poultry waste," Mr. Charles F. Bassett, of the United States Department of Agriculture, states

that "Mink fed capette waste should not be kept over for the breeding herd." Consequently, in the latter part of 1950, I pelted off the greater part of my breeding stock. Of the pelted animals, 237 have been sold to date at an average price of $23.40 per pelt. The quality and value of the pelts not sold to date is comparable on the average to those heretofore sold.

In previous years, it has been my practice to increase my breeding herd from year to year, the extent of the increase varying in different years. Previous to the whelping season in 1950 and at a time when the ensuing crop failure was not anticipated by me, I planned to increase my herd by retaining as a part of my breeding stock out of the kits whelped 17 males and 65 females. However, because of the very small crop and the possibility that the kits whelped may have been injured by the drug consumed by the mothers in the period between breeding and whelping, it was necessary to pelt the entire crop.

The cost of feeding one mink for 1 year is approximately $18, and this cost of feeding the nonproducing females for 1 year constitutes a part of my loss and claim.

In 1948 and again in 1949, Walter T. Graf, president of the Graf Fur Co., Inc., of Chicago, Ill., inspected and graded all of the live mink on my farm, and he is thoroughly familiar with the quality and condition of my breeding stock retained for the 1950 breeding season. Three hundred and two females did not whelp, and 21 produced litters of 2 kits of less. The extent of the damage of the 88 males cannot be measured. All of these 411 animals were classified as large and were from litters of from four or more kits. They were of the following types:

Type	Sex	Number	Type	Sex	Number
Darks	Male	28	Silverblus	Female	33
Do	Female	120	Silverblu Breath of Spring	Males	12
Pastels	Male	34	Do	Female	7
Do	Female	106	Recessive Blufrost	Male	1
Pastel Breath of Spring	Male	7	Do	Female	2
Do	Female	8	Recessive Blufrost DiHybred	Male	3
Pastel Halfblood	do	42	Do	Female	5
Silverblus	Male	3			

None of these mink at any time gave evidence of any disease, or of any other condition tending to cause a breeding failure other than the consumption of stilbestrol from eating the chicken heads. The above 411 mink were appraised by Walter T. Graf in the total sum of $49,345, of which amount $33,720 is for the females and $15,625 for the males.

In view of the facts set forth above, the loss basis of my claim is as follows:

Cost of replacing 323 females (302 nonproducing and 21 producing 2 kits or less)	$33,720.00
Cost of replacing 88 males	15,625.00
Cost of procuring intended increase of 17 males at $175	2,975.00
Cost of procuring intended of 65 females at $100	6,500.00
Cost of feeding nonproducing females 1 year at $18	5,814.00
Total	64,634.00
Less salvage of pelts of destroyed animals at $23.40 per pelt	9,617.40
Total claim	55,016.60

HENRY JOHN KRUEGER.

Subscribed and sworn to before me this 28th day of February A. D. 1951.

ELIZABETH A. ALCOTT,
Notary Public.

Mr. PARKHILL. I should like to ask, Mr. Chairman, that somewhere in the proceedings, at an appropriate time the bill introduced for Mr. Krueger be amended in committee, to change the amount of the claim, reducing the amount to $55,016.60.

Mr. JONAS. What is it now?

Mr. PARKHILL. It is about $500 more.

At the time the original bill upon which all these bills are modeled was prepared last summer, we, of course, had to estimate what the prices would be during the late fall season when all these trades take place, and we missed it in both directions. The value of the pelts went up much more than the cost of breeding stock, so that actually the increased value of the pelts reduced the claim by approximately $500.

Mr. JONAS. Is there any evidence in the record that the animals that you refer to as breeders in 1946 were the same male and female animals that you had in stock in 1949?

Mr. PARKHILL. All that information is available, but frankly I haven't made any check of it, and certainly they would not be all the same, of course. I could not answer that question. We have the most detailed production records of every animal showing what the blood stream was for four generations. It is graded as graded by Mr. Graf, and in regard to the breeding history of all of the animals we have a complete record on every individual animal so that the information is available, but it would also be very voluminous to set forth. I do not know how one could set forth the information unless it were a specific question. If you wanted to see the production record and the history of each animal, it would be a tremendous voluminous document. It could be furnished you if the committee would like to have it.

Mr. JONAS. Do they register breeding animals by pedigree?

Mr. PARKHILL. Not that we know of.

Mr. JONAS. But they keep certain records of their ability to produce?

Mr. PARKHILL. Of the blood line.

Mr. JONAS. Of their ability to produce, and it would encourage them to keep them for breeding purposes. Can anybody tell me how long they keep their stock for breeding purposes, over what period of time and when they are of no further use for breeding and production?

Dr. BYERLY. I cannot give you the average productive life of mink. Certainly, judging from the replacement ranging from 30 to 40 percent of kits, one would suppose the breeding life would be not more than three seasons. It varies from place to place. A man may replace 30 to 40 percent of his kits each year. In other words, he would replace adults with year-olds, but some of the breeding stock would be 6, 7, and 8 years old.

Mr. JONAS. Is that the extent of your proof?

Mr. PARKHILL. That is the extent of my proof. It is barely possible that I shall, in addition to the documents which Dr. Byerly has been kind enough to get for me. It is barely possible that, at the conclusion of what the Department is offering, I might want to introduce additional evidence.

Mr. JONAS. That is perfectly agreeable to both sides. Both may have rebuttal. Both sides will be entitled to all the liberty you require in making up your record.

Do you want to proceed, Dr. Byerly, and make your statement at this time?

STATEMENT OF DR. T. C. BYERLY, ANIMAL HUSBANDRY DIVISION, BUREAU OF ANIMAL INDUSTRY, AGRICULTURAL RESEARCH ADMINISTRATION, UNITED STATES DEPARTMENT OF AGRICULTURE

Dr. BYERLY. Mr. Chairman, first of all, I do not propose to make two reports, one on H. R. 2591 and the other on H. R. 2592.

One is for Kirsch and the other is for Kjaer. The reports in both cases are identical, and the report in one is applicable to the other case. There is some slight modification between the present report and the one submitted on the old Krueger bill during the last session.

Shall I read this formal statement for the record?

Mr. JONAS. The one which we already have?

Dr. BYERLY. Yes. There are some slight modifications from that. There is a little, slight difference.

Mr. JONAS. I have no objection if you read it. I do not have a copy of your latest report.

Dr. BYERLY. Then I will read it. It is dated March 1, 1951, and is addressed to:

Hon. EMANUEL CELLER,
Chairman, Committee on the Judiciary, House of Representatives.

DEAR MR. CELLER: Reference is made to your letter of February 15, 1951, requesting a report from this Department on H. R. 2592, a bill for the relief of Frederick Kjaer. The bill is to compensate Frederick Kjaer for alleged damages to mink as a result of using certain poultry waste upon the approval and recommendation of the Department from November 1948 through January 1949.

I might say that practically the same report was made in the case of Henry J. Krueger's claim.

In April 1947 the Bureau of Animal Industry of this Department undertook research on the value of poultry offal in the diet of domestic fur animals. This project was undertaken to find a substitute for horse meat, which had been the main source of animal protein on many fur farms. The increasing scarcity and cost of horse meat made search for a substitute imperative, and the increasing availability of poultry offal through the development of many poultry-dressing plants at country points stimulated research designed to find profitable new uses for this byproduct material. For several years prior to development of the Bureau's research, fur farmers had used varying amounts of poultry offal, but published information with respect to nutritive value and optimal levels of feeding were very meager. A report on feeding trials indicating poultry waste was a satisfactory replacement for horse meat in mink diet had been published in the National Fur News (vol. 17, No. 7, August 1946). Preliminary feeding tests conducted by the Bureau in the summer and fall indicated that poultry offal could be used during those seasons as a substitute for horse meat. A report of these tests was published in the fur-trade journals of the United States late in 1948 and early in 1949.

Materials used in these feeding tests included heads, feet, and viscera obtained at a local dressing plant at Saratoga Springs, N. Y., and, so far as is known, contained materials from chickens treated with diethylstilbestrol. This drug is used principally on commercial broilers produced for a premium market. When administered to male chickens the drug suppresses masculine traits and increases fatness and carcass desirability. A pellet containing not more than 15 milligrams of diethylstilbestrol is administered by subcutaneous implantation in the nuchal region of the chicken. The pellet residue, which is removed with the head, may contain 1 to 5 milligrams of the drug.

Since treatment has little influence on growth rate, a premium market must be available to make the practice profitable. Very few treated broilers, known to the trade as caponettes, were produced in 1947. The development of specialty premium outlets for them increased in 1948, and in 1949 it has been estimated that about 4 percent of commercial broilers produced were caponettes. Produc-

tion of caponettes further increased in 1950, and the treatment is being extended to turkeys.

During 1949, field observations made by employees of the Bureau of Animal Industry of several scattered cases of breeding failure in mink led them to suspect that caponette heads were present in poultry offal fed and that the cause of breeding failure might be residual dietylstibestrol, because experiments which the Bureau had been conducting with diethylstilbestrol to induce mating of relutant breeding minks showed that 3 milligrams of the drug interfered with the production of mink kits. Field examination of poultry offal were made which disclosed several cases in which some caponette heads had been fed. Ovaries of mink fed such material showed at pelting time in the fall of 1949 considerable abnormality in microscopic structure.

Having established a strong presumption that feeding caponette heads to mink might suppress breeding, the Bureau issued a warning on January 16, 1950, and forwarded it to all fur journals. The information was published in February issues of fur journals. A second warning was issued June 21, 1950, and a still stronger one on July 17, 1950, following a Bureau-sponsored conference on this subject in Chicago on July 10, 1950. Copies of the warnings issued on this subject are enclosed.

A report of private research published in the Black Fox magazine (October 1950) on the effects of diethylstilbestrol on breeding mink states, in part: "After the 1949 whelping seasons, the evidence against diethylstilbestrol was incriminating but purely circumstantial." This same report contains results of experiments with four female breeding mink conducted in March 1950. These minks received 150 gamma daily of diethylstilbestrol (one gamma equals one millionth of one gram). None of the minks produced young. Careful examination of the animals and especially the reproductive tracts revealed apparent abnormal condition which was considered to be due to the diethylstilbestrol administered.

No experiment specifically using caponette heads as feed has been reported. It is not know at what level, during what season, or how long such heads must be fed to be harmful to breeding mink. However, there is a strong presumption that a sufficient quantity of caponette heads over a sufficient period would be harmful. Research on this subject is being conducted by the Bureau in connection with Swarthmore College, Cornell University, and individual fur farming and poultry leaders during the 1951 breeding season. The mink are being fed caponette waste of known origin and history at variant levels in comparison with poultry waste from normal chickens. This experiment will give information from actual research on the feeding of caponette waste.

Controlled exepriments are also being conducted by the Bureau in which known variant levels of the crystalline diethylstilbestrol are being fed. Effects on the reproductive rate and on the miscroscopi cstructure of the ovaries will be determined.

Many mink farmers have successfully fed poultry waste in 1950. Some fur farmers fed it during the 1950 breeding season with satisfactory reproduction. Minks, more so than other animals, are subject to varying degrees of breeding failure, due to a variety of causes. The use of caponette heads in the ration is only one of the many factors which may result in low fertility or sterility.

In summary, any feeding reports made by the Department can only be made for the products included in an experiment and under the feeding methods employed in it. In the instant case, poultry offal, which, to our best knowledge, does not contain caponette heads, was employed in an experiment in the summer and fall. Very few caponettes were being raised at that time. Apparently, Frederick Kjaer fed poultry waste during a later period (November 1948 to February 1949). In publicizing results of research, it would be impossible to envision all production and marketing changes which will be made in the future, as in the case of the development of markets for broilers treated with diethylstilbestrol, that modify the value of our research data. The Department has not at any time recommended the feeding of caponette heads to minks during the breeding season. In fact, specific warning was given in 1950 against such practice.

In view of the above, we do not believe the Department should assume responsibility for losses such as are alleged by Frederick Kjaer. Passage of H. R. 2592 is not recommended.

The Bureau of the Budget advises that, from the standpoint of the program of the President, there is no objection to the submission of this report.

Sincerely yours,

K. KEEFER HUTCHINSON,
Acting Secretary.

Practically the same letter was sent in regard to the Krueger claim.

I might add that when the reports were written in regard to the bills introduced in the last session, since that time we acquired additional information, which was incorporated in the present letters.

Then, these releases were issued [reading]:

DEPARTMENT OF AGRICULTURE,
AGRICULTURAL RESEARCH ADMINISTRATION,
Washington, June 21, 1950.

USDA WARNS ON FEEDING OF POULTRY WASTE TO MINK KEPT FOR BREEDING PURPOSES

The increasing scarcity and higher prices of horse meat has caused mink raisers to seek other sources of meat for their animals. They have turned to fishery waste, poultry waste, and other meat byproducts as available substitutes for horse meat, says the United States Department of Agriculture.

The use of poultry waste from dressing plants, especially chicken heads and feet, has become quite general in many areas. Research and experience have demonstrated that these products are excellent sources of animal proteins for growing mink. Recently, however, according to reports to the Department's Bureau of Animal Industry, reproductive failures have been encountered by some fur farmers who used poultry waste for their breeding animals.

While it has not been finally demonstrated that poultry waste is the cause of these reproductive failures, the incriminating evidence is sufficient to justify a warning against the unlimited use of poultry waste in the diet of fur animals kept for breeding purposes.

This warning should be especially heeded in the case of poultry heads from "caponettes," chickens which have received an implantation in the neck of a hormone pellet to improve their market quality. Any remaining pellet residue is removed with the head and may be present in sufficient quantity, when heads make up a large portion of the diet, to interfere with reproductive processes in mink. There have been no ill effects, the Bureau states, from feeding chicken heads from caponettes to minks that are to be pelted.

Then another release was issued on July 17, 1950, which reads as follows:

COMMITTEE WILL STUDY BREEDING FAILURES IN MINK FED POULTRY OFFAL

The increasing number of breeding failures in farm-raised mink (as reported by the United States Department of Agriculture on June 24) was stressed at a recent conference of breeders and others in Chicago, called at the request of Dr. B. T. Simms, chief of the Bureau of Animal Industry. Dr. Simms appointed a committee consisting of mink breeders, research workers, poultry processors, and others to study the cause and develop a program for the assurance of adequate dietary ingredients of animal origin for farm-raised mink.

Many of the herds of mink that have suffered breeding failures had been fed poultry offal containing heads from caponettes. These are chickens that had a pellet of diethylstilbestrol implanted in the neck from 2 to 4 weeks before marketing. The pellet causes the bird to fatten quickly, cease to grow new pin feathers, and causes the comb to shrink. Some specialty markets pay a premium for caponettes and their production is rapidly increasing.

Female hormones are produced by the diethylstilbestrol and in normal quantities they are essential to reproduction. However, the residue from the implanted pellet is removed with the head of a chicken that is dressed for market. The flesh of the caponette contains only normal amounts of the hormone, but the residue in the pelleted head may be considerable. Excess quantities of the hormone consumed by breeding mink may interfere with reproduction and cause breeding failures in both male and female minks. Females may fail to conceive after mating and, if they conceive, the embryos may die before birth.

The proper dosage of such female-hormone-producing drugs is not known and until they are known or until feed-assay methods are improved, mink breeders are again warned to avoid feeding poultry waste containing caponette heads to young mink that are to be raised for breeding purposes. If poultry offal must be fed, the breeder should take special care to remove caponette heads.

I would also like to read a copy of a statement put out entitled "Mink Breeders Cautioned on Use of Chicken Waste":

Many inquiries are coming to the Federal and cooperating agencies concerning the desirability of using chicken waste during the reproducing period. Two years' study at the United States Fur Animal Experiment Station in Saratoga Springs, N. Y., on feeding a ration composed of 35-percent chicken waste gave unfavorable results in number of young minks produced. Just what the cause is has not been determined, but a sample survey as to the source of chicken waste did not reveal that any diethylstilbestrol was used in growing the chickens. This hormone is being injected under the skin of the heads of chickens by some poultry raisers to produce what is known as "capettes." Old male birds and young birds of both sexes are more readily finished or fattened in this way than they would be otherwise.

Preliminary studies at Swarthmore College, in cooperation with the Department of Agriculture, of administering this powerful hormone to mink, show very positive effects on the reproductive organs. Some mink breeders have given the drug to reluctant and late-breeding female minks to stimulate them sexually. No proper dosage has been found, nor has it been determined that this material should be used at all. Under these circumstances, the question arises as to whether there might be a residue of diethylstilbestrol in the chicken waste that might be harmful to minks during the breeding season. Dr. R. K. Enders, of Swarthmore College, is pursuing these investigations in cooperation with the United States Department of Agriculture. Until some definite information has been obtained, it is recommended that each mink producer check the source of supply of chicken waste, since possibly such feed may be safely fed only when it has been determined that no diethylstilbestrol has been used.

Charles F. Bassett, director of the United States Fur Animal Experiment Station, recommends that no chicken waste from birds treated with these pellets be used during the mink-breeding season nor fed to kits to be kept for breeding. He also suggests that no more than one-third of the meat ration for minks during the breeding season be composed of chicken waste free from this drug.

Mink breeders should not get unduly alarmed about the feeding of chicken waste, but should observe caution as suggested. Chicken waste is undoubtedly a good fur-animal feed, but its limitations and proper usage must be determined to give the most satisfactory results.

Mr. JONAS. May I inquire, Dr. Byerly, whether the data you are now presenting is being offered on H. R. 846, which is a bill for the relief of Henry J. Krueger, of Elgin, Ill., or whether your statement would be the same in regard to that bill?

Dr. BYERLY. The statements on the two bills are practically the same, except as to the time.

Mr. JONAS. You have separate reports on each of these bills.

Dr. BYERLY. The reports are separate and distinct, but they are practically identical, and what I say in regard to one I would say in regard to the other.

Mr. JONAS. We have in our present file a report of September 4, 1950.

Dr. BYERLY. That was the previous report. Since that time we have received additional information, and the report that I just presented contains added information since the previous report was written. The report that I read in regard to Mr. Kjaer's case applies equally to the case of Mr. Krueger.

Mr. JONAS. If you want to, you can substitute your present report for the one now in the file.

Will there be additional reports on these other claims?

Dr. BYERLY. We only prepared two reports definitely requested, and we feel that they are definitely applicable to all the claims.

Mr. JONAS. Very well. You may proceed with your statement.

Dr. BYERLY. May I begin with some further comment on estrogens?

Mr. PARKHILL. Did you write the report?

Dr. BYERLY. Mr. Parkhill asked me if I wrote the report. Let me say I supplied, or assisted in, the preparation of the material from which the material was drafted. In other words, I did not write the report itself; no.

Mr. PARKHILL. You have a ghost writer?

Dr. BYERLY. No; there are people whose job it is to put these things in standard language, and they take the material supplied to them.

Mr. PARKHILL. You furnished the technical material?

Dr. BYERLY. That is true.

With respect to estrogens and what they do, it has been pointed out that there are many substances of estrogenic activity, some of an ovarian origin, some of them originating in the urine of pregnant mammals and some of them originating in the testes of male animals. Its origin is not limited to the female sex, but it is a substance that is found in every higher living animal. It is also found in plant materials. It is found in one forage crop in Australian subterranean clover. Estrogens are widely distributed in nature. Now, I am not talking about diethylstilbestrol, but I am talking about estrogens. There are many substances in nature that have estrogenic activity.

I wish first to point out some of the effects of diethylstilbestrol. The first obvious effect on the female animal is to bring it into heat; that is, into sexual receptivity. It varies from time to time somewhat in the manifestation of heat. Another effect that it has, and the one that is specifically pertinent in the poultry and livestock industry, is that it has an effect on the mobilization of fat.

Young growing animals do not fatten very much, and when they are sent to market they are lacking in fat. They grow, rather than fatten, and the principal value to the commercial meat producer, poultrymen as well as other livestock producers, is that the application of this hormone will check growth and facilitate fattening, so that the animals go into a higher grade and sell for a better price.

There is a standard quotation on the New York market showing that these specially fattened poultry and animals bring a much higher price. Stilbestrol-treated poultry bring about a nickel a pound more on the New York market.

I have the Poultryman of Friday, February 23, 1951, which gives the following quotations on live poultry:

Fowl, leg. 33–34; hy., 37–42½; broilers: hy., 34–40; pullets: hy., 37–52; chemical fryers, 35–46; turkeys, hens, 53, toms, 45; rabbits, 30–40.

Now, with respect to the research that was done by Dr. Enders, it was noticed that the first report of that was in 1947, I believe, and I have here a copy of the Anatomical Record. That was an abstract, and it is noted in the record that a letter was asked for, giving approval of that. It is not standard practice to ask for approval of abstracts, because the authors have a way of delaying getting out their abstracts, and so we have no letter of approval.

The article is entitled "Induced Mating in Ovariectomized Mink, Mustela Vison," by Robert K. Enders, department of zoology, Swarthmore College, and Bureau of Animal Industry.

Diethylstilbestrol administered subcutaneously in sesame oil during the animal breeding season does not cause enlargement of the vulva in castrated mink to a size where intromission is possible, but females so treated will permit attempts at copulation. The female mink comes into estrum for approximately 3 weeks

once each year. At any given day of the season, she may or may not be willing to copulate. In an attempt to determine some of the factors underlying this apparently erratic breeding behavior, eight females were ovariectomized while anestrous in January. Between March 9 and 18 each animal received 30 milligrasm diethylstilbestrol. After receiving 5 milligrams, one female "chuckled," as though receptive, then fought off the male. Mating behavior but without intromission was observed in an animal after she had received 15 milligrams. Only one failure to permit the male to grasp her was observed between March 15 and April 15, and the female involved submitted to another male the same day. On April 15 a treated female permitted a male to attempt intromission for 1½ hours. While the female showed every sign of being willing to copulate, in no case did the vulva increase from the anestrous to the estrum size, so intromission was impossible.

That article appeared in a reprint from the Anatomical Record of the American Association of Anatomists, 1948, sixty-first annual meeting, at Madison, Wis., April 21, 22, and 23, appearing in the Anatomical Record, volume 100, No. 4, April, and the article by Dr. Enders appears at page 106.

Dr. Enders' purpose in undertaking this work was to learn how to improve, to increase, the breeding rate of mink.

I have noted in these various exhibits that Mr. Parkhill introduced that there is a variant percentage, approximately 15 percent of female mink which either do not mate or do not produce offspring, and some of them produce smaller litters.

Dr. Enders' purpose in undertaking the work was to bring reluctant females into season and get them to breed. He continued that work through 1947, 1948, and 1949, and, to the best of my knowledge, he is still interested in bringing about an improvement in the breeding behavior. He was discouraged because he found that a 3-milligram dose brought about mating behavior but interfered with reproduction. I point out that these experiments were done in the breeding season and following the breeding season and not prior thereto. The normal breeding season is important. It depends primarily on the seasonal variations in day length. This factor is apparently required. The increased length of the day brings about stimulation of the generative glands and stimulates both the male and the female organs. Natural estrogens bring about breeding, followed by pregnancy.

Now, I did not concede this morning that diethylstilbestrol in all cases will destroy the ovaries. The results obtained thus far have not been conclusive, but we have done work with diethylstilbestrol in several classes of animals, and others have also done work with various other classes of animals. For example, we have been interested in an early determination of the probable milk production of goats. Goats breed sometime after about 1 year old. If in the first season you can determine their probable milk production, we can enable people to eliminate nonprofitable producers at an early stage.

So we took a group of kids—does—and gave them diethylstilbestrol over a considerable period of time in their first summer; that is, when they were 1 year old. Milk production did take place. Following investigation for a considerable period of time, it was concluded it was possible to use these studies in a rough way to predict the milk product.

We prepared a summary on breeding performance of does used: A study on the Use and Effect of Hormone-Induced Lactation in Goats. The summary is as follows:

During the 3-year period 1947 to 1949, a total of 40 virgin yearling does of the Toggenburg breed were studied at Beltsville to determine the effect of hormones

for inducing lactation in goats. Each year the does were divided into two groups, a treated and an untreated or control group. Does in the treated group were injected subcutaneously with 0.5 milligrams of stilbestrol in 1 cubic centimeter of oil, three times weekly during a 6-week period beginning in the first part of May. While the principal objective was to induce udder development and lactation in the does, consideration was given to any effects which stilbestrol might have on the estrus cycle and the fertility of the does.

During the 3-year period 19 does which had been treated as described above were available for observation during their first regular breeding season in the fall. Of the treated does, approximately 74 percent bred and produced kids the following spring. Twenty-one percent of the treated does showed estrus but failed to breed, and 5 percent failed to show estrus during the fall breeding season. In comparison, 62 percent of the untreated does bred during the first regular fall season, 33 percent showed estrus but failed to breed, and 5 percent failed to show estrus at any time. Twelve of the nineteen treated does were observed during their second regular breeding season. Of these does, 84 percent bred and produced kids the following spring, while 8 percent showed estrus but failed to breed, and 8 percent showed no estrus at all. The 14 untreated does, or 100 percent, bred in the fall and produced kids the next spring.

No doe in the treated groups was observed to have an extended or continuous period of estrus. However, the treated does were noted in estrus more frequently than untreated does during the active period of stilbestrol injection.

The use of stilbestrol does not appear to have had much, if any, ill effect on the normal breeding activity of the does. This is evidenced by the fact that the data for both years, when added together, shows that 22.6 percent of the treated does and 22.8 percent of the untreated does failed to breed in the fall seasons. Data on 12 does treated with stilbestrol in 1950 will not be available until the 1951 kidding season closes.

I am advised by the dairy people that the same thing was done in England during the war. There were a good many heifers which failed to breed in the normal season. Experiments were tried by Dr. John Hamilton of Cambridge. A good many farmers gave their heifers 2 to 5 grams of stilbestrol to induce milk production, rather than turn them in to the butcher. They also came into estrum, into heat, and they would ride one another and break down their hips. Their subsequent behavior was perfectly normal.

During many experiments, some with chickens and some with turkeys, where estrogens have been used with laying birds, it did not interfere with egg production. There are many references that I have here that indicate that egg production may continue, especially with moderate dosages, and I mean dosages of what we are considering here. Therefore, you have no possibility of finding in every case and in every animal that diethylstilbestrol will interfere in every instance with the function of the ovaries. It simply is not substantiated by the evidence that it will interfere in all cases.

Now, with respect to the effects on humans, I personally am hardly competent to speak. I am not a medical man. I do have some references to the literature, such as Mr. Parkhill produced, and I would like to refer specifically to an article which appeared in Endocrinology in October 1947, the article being entitled "The Quantitative Recovery of Synthetic Estrogens from Tissues of Birds (Gallus Domesticus), the Response of the Birds' Testis, Comb, and Epidermis to Estrogen, and of Humans to Ingestion of Tissues from Treated Birds." This article was prepared by S. Bird, assistant, poultry division, of the experimental farm, Ottawa; L. I. Pugsley, pharmacist, foods and drugs division, national health and welfare, Ottawa; and M. O. Klotz, pathologist, Civic Hospital, Ottawa.

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It is pertinent to point out in this connection several estrogens were used. Among them were diethylstilbestrol, dimethylester of diethylstilbestrol, dianestrol diacetate, dimethylether of dianestrol, and dimethylether of hexestrol.

The study showed that the diethylstilbestrol had a considerably higher estrogenic activity than the other compounds. It was also noted that the activity of dimethylether of diethylstilbestrol and dimethylether of dianestrol was greater by oral than by subcutaneous administration. That was contrary to results usually found with most estrogens.

In the experiments it was considered that the amount of estrogens in the tissues of the reproductive organs of the subjects of the experiments, after administering diethylstilbestrol and dianestrol diacetate was relatively small. It was found that the residue in the flesh of the chickens used in the experiment was comparatively small, it being an insignificant amount.

The North Dakota Agricultural College, in its bulletin of January 1951, reporting on stilbestrol as a possible growth stimulant for lambs, states:

> Half of the lambs on certain feeding trials were treated with stilbestrol, a hormone-like substance. During the 102-day feeding period the untreated lambs gained an average of 0.35 pound per head daily and the stilbestrol-treated lambs gained 0.44 pound per head daily. This difference was consistent, and amounts to nearly a 25-percent advantage in favor of the treatment. No differences were indicated in the quality of the dressed carcasses.

That finding was made by E. W. Klosterman, associate animal nutritionist, and W. E. Dinusson, associate in animal husbandry.

I have a preliminary report on experiments not yet completed on the effect of hormones on the growth and fattening of yearling steers. This study was conducted by F. N. Andrews, W. M. Beeson, and F. E. Johnson, department of animal husbandry, Purdue University, Lafayette, Ind. Studies at Purdue during the past 10 years have shown that the administration of certain hormones by injection or in the feed may increase growth and fattening and improve carcass quality in cattle, swine, and chickens.

In a previous study, beef heifers injected with stilbestrol (a female-like hormone) pellets gained more rapidly and required less feed per pound of gain than did normal control or spayed heifers. The male hormone, testosterone thyroprotein and thiouracil were of no benefit to the heifers.

On November 16, 1949, four groups of 10 yearling steers each were started on a fattening ration composed of corn-and-cob meal, cottonseed meal, molasses feed, clover-timothy hay, bonemeal, and salt. One group was treated by placing a total of 60 milligrams of stilbestrol pellets beneath the skin in the neck region, a second group received 120 milligrams of stilbestrol pellets, one group was injected with 180 milligrams of testosterone pellets on November 16, and with 75 milligrams of testosterone on February 20, 1950.

Since this experiment is still in progress, final conclusions cannot be drawn. At the end of 140 days the steers receiving either 60 or 120 milligrams of stilbestrol had gained 40 and 63 pounds more per steer, respectively, than the controls, and required less feed per pound of gain than the controls. These results are similar to those obtained with beef heifers. Testosterone did not improve growth rate or feed efficiency in either the steers or heifers.

The American Medical Association archives of dermatology and syphilology, in the February 1951 issue, reports an article entitled "Estrogens by Local Application in Treatment of Acne Vulgaris." The article is by Irving Shapiro, medical doctor, of Newark, N. J.

Acne vulgaris is associated with pilosebaceous irritative phenomena manifested as excessive oiliness, comedos, papules, pustules, and cysts. These are aggravated wherever the sebaceous glands are most numerous, namely, on the face, chest, and back. Only the adolescent type of acne is considered in this study.

Evidence that this disease is primarily an endocrine disturbance may be summarized as follows: (*a*) The usual incidence is at the time of puberty; (*b*) the premenstrual flare-up of the lesions occurs when the estrogen level is lowered; (*c*) production of acne occurs in females who are given androgen; improvement follows on withdrawal of it, and recurrence is observed when it is given again; (*d*) acne is not found in eunuchs; and (*e*) acne is much commoner in males. These observations indicate that androgens produce pilosebaceous activity and further work suggests an increase in the ratio of circulating androgens to estrogens as a causative factor in acne vulgaris.

Ten men and fifteen women, whose ages ranged from 17 to 30 years, were studied. These patients had the usual signs of acne vulgaris, such as oily skin, papules, comedos, pustules, and cysts, on the face, chest, and back. The condition in these patients had proven refractory to usual methods of treatment, since all had had one or two courses of roentgen ray therapy, ultra violet irradiation, dietary regimens, and topical applications of healing and desquamating preparations. These patients appeared to be free from other disease, and none had any other manifestation of an endocrine disturbance.

Local application of estrogens was employed in the form of the use of premarin cream, a preparation which contains 2.5 milligrams of water-soluble conjugated estrogenic substances (equine) expressed in terms of sodium esterone sulphate per gram of vanishing cream mixture. The average dose was 5 milligrams of the estrogenic substances applied to the locally affected areas once daily or divided into morning and evening applications, as an after-shave cream for the men and a powder base for the women. Therapy was continued for periods ranging from 1 to 7 months, with an average of 4 months. The total amount of estrogenic substances applied ranged from 150 to 700 milligrams.

One patient received 150 milligrams, one patient received 400 milligrams, and some received 500, 600, 650, and 700.

The results obtained from premarin cream are tabulated. In 15 patients the results were excellent; in four they were good; and in three, fair. Three patients could not tolerate the cream because of itching, flare-ups, and cosmetic disagreeableness.

Two illustrative cases were presented, one demonstrating in a young woman and the other in an older woman the beneficial effects of premarin cream therapy in controlling the cystic infection, oiliness of skin, and other manifestations of acne vulgaris.

Case 1 was that of a 17-year-old girl who was seen in July 1948 with the chief complaint of "pimples" on the face, cheeks, and forehead, of 4 years' duration. She had had roentgen ray treatments the year before, and after temporary improvement the eruption had relapsed. Her dietary history showed no abnormalities; her bowel habits were not unusual. Her menses were regular, although she had some premenstrual tension, and her breasts were normally developed. She was placed on premarin cream therapy, sufficient cream being used to insure application of 6 milligrams of estrogenic substances daily. No other therapy was administered except drainage of the pointing pustules and exclusion of iodized salt from the diet.

Improvement was noted within 3 weeks, and after 6 weeks pronounced improvement occurred. The patient noted less menstrual tension and dragging feeling at the menses. Her skin became less oily, fewer new infections appeared. It was decided to stop use of the estrogen cream and to replace it with a standard sulfur preparation, in order to evaluate the role which the estrogens played. There was a slow but persistent recurrence of pustules and oiliness, so that within a month the patient demanded a return to estrogen therapy. Reinstitution of premarin cream thrapy once again caused involution of the acne.

Case 2 was a 30-year-old white woman who since the age of 13 had had severe, resistant acne vulgaris, which failed to improve on treatment with diet, salves,

lotions, and roentgen radiation. She was markedly scarred and still presented a muddy, oily complexion, with numerous deep-seated reddish cysts about her face, which repeatedly flared up before her menses and occasionally discharged a thick yellow material. She was placed on treatment with premarin cream, a sufficient amount being used to insure application of 2.5 milligrams of estrogenic substances three times a day for about 2 weeks, then twice a day for two more. Subsequently, she received a maintenance dose of 2.5 milligrams of estrogenic substances by local application at night.

Within 2 weeks she noted a decrease in the oiliness of her skin, which acquired a satiny texture; the cysts failed to flare up before her menses and gradually subsided in size. Within 3 months she noted a remission of her acne for the first time.

The earliest objective changes were observed after 4 to 6 weeks. These were (*a*) a decrease in the sebaceous gland activity, (*b*) a diminished number of new comedos and pustules, (*c*) involution of old lesions, and (*d*) development of a supple texture and feel in the treated areas. No systemic effects of inunction of estrogenic substances were observed.

In commenting on these cases, Dr. Shapiro states:

Although more than 80 percent of clinically significant cases of acne vulgaris respond to orthodox management, the occasional stubborn relapsing type should be given the benefit of therapy by local applications of estrogen substances. The present report concerns a group of such cases.

Selye states that estrogens are absorbed poorly from the skin. Since only 10 to 15 percent of the estrogens are absorbed from ointments, relatively high quantities of the cream were used in this study in order to get the desired effect on the target area.

The fairly young people with acne appear to have a surplus of androgenic hormones, a manifestation which is not so apparent in later life. This observation may explain the fact that young patients may require larger dosages of estrogens locally for a beneficial response.

In acne there seems to be an alteration of the estrogen-androgen ratio. It is believed that the local application of estrogenic substances helps to restore a normal balance in the skin.

In his conclusion, Dr. Shapiro states:

Remissions were observed in 60 percent of cases of acne vulgaris, previously recalcitrant to orthodox measures, after local application to the lesions of a cream containing estrogenic substances (water-soluble). No harmful effects were noted after 4 to 6 months' application of estrogens.

In the summary, Dr. Shapiro states:

Twenty-five patients with acne vulgaris resistant to usual therapeutic measures were treated with local applications of a cream containing estrogenic substances.

Within 6 weeks, oiliness, papules, and pustules had appreciably subsided in 15 of the patients. In seven other patients, the response was less prompt.

A promising new therapeutic approach to resistant acne vulgaris is described.

That study is an indication that there can be therapeutical effects resulting from the use of creams containing estrogenic substances.

Now, referring to the cases on hand, in regard to the feeding of mink, on page 890 of the 1939 Yearbook of the Department of Agriculture, we have an article on recommendations for feeding minks which reads as follows:

The experience of successful mink raisers and the few experimental results available indicate that mink should be fed a ration containng more raw meat than is necessary for foxes. The amount of raw meat should be about 50 percent of the ration during the summer and fall and as much as 70 percent during the breeding season and lactation period. This raw meat can be muscle meat (two parts) and viscera (one part) of either horse, cow, or sheep. The viscera may be heart, liver, kidneys, spleen, or brains, in varying proportions. A variety is desirable. Some tripe, udders, and lungs can replace the other organs during the summer and fall. Whole fresh-ground fish or canned fish may be substituted for as much as 33 percent of the raw meat. Contaminated fish or meat should never be used. Chicken or rabbit heads or rabbit carcasses can be used,

if fresh. The dry mixture suggested for foxes during the breeding season should prove satisfactory when constituting 10 to 15 percent of the mink ration during the breeding season. Dry mixture No. 7 (p. 880)—

That mixture is comprised of bread meal, 150 pounds, oatmeal, 150 pounds, alfalfa-leaf meal, 50 pounds, wheat-germ meal, 50 pounds, fishmeal, vacuum dried, vitamin D, 100 pounds—

Can be used during summer to the extent of 25 percent of the ration. The ground green bone should be 5 percent; and tomatoes, carrots, turnips, green lettuce, and other ground vegetables, 5 percent. Salt should be added to the extent of about 0.5 percent of the ration as fed. The remainder should be water or cream, fresh milk, sufficient to make the entire ration of hamburger consistency. As a precautionary measure, 0.3 percent of fortified cod liver oil should be added to the ration.

Mink should be full fed twice daily while suckling their litters. At other times, one feeding in the evening is all that is necessary for adults, and this should be so restricted in quantity that the animals will not get too fat.

To give you the results of our latest experiments with mink at our Saratoga, N. Y., United States Fur Animal Experiment Station, I received an office memorandum yesterday from Mr. Charles E. Kellogg, conducting fur-farming investigations. Animal Husbandry Division, in Beltsville, Md., sent to him by Charles F. Bassett, of the United States Fur Animal Experiment Station at Saratoga Springs, N. Y. It is on the subject of outline of caponette experiments. It reads as follows:

As requested in your telegram received this morning we are enclosing an outline of the caponette experiment with mink.

You will recall that during our discussions we more or less tentatively agreed upon using horse meat that had been held in storage no longer than 4 months. Our thoughts in this respect were that possible deterioration might affect the results adversely and would result in poor production even from mink on the control ration. Since discussing the matter with you and pondering on the possible effects of feeding meat that has been in storage quite some time, it has seemed to me to be desirable to use meat that has been stored for an even shorter period of time. We are, therefore, following the practice of using fresh horse meat wherever possible, but under no circumstances using horse meat that has been stored more than 6 weeks.

Unfortunately, since the experiment was originally planned, we have had a number of casualties. The following information will show the number of animals now remaining on the seven experimental lots:

Lot 1, 9 females; lot 2, 10 females; lot 3, 9 females; lot 4, 9 females; lot 5, 8 females; lot 6, 10 females; and lot 7, 10 females.

Then, he sends along an outline of the mink reproduction experiment, No. 35–I–1951.

The time—From January 23, 1951, until last litter weaned.

Purpose.—Using a diet fed on a large commercial mink ranch as a control—

(1) to study the effect on reproduction of diets in which—

(2) half the horse meat is replaced by caponette heads and feet;

(3) by heads, feet, and entrails of caponettes; and

(4) by normal chicken heads and feet;

(5) by heads, feet, and entrails from normal chickens;

(6) a diet in which horse meat is entirely replaced by caponette heads and feet;

(7) and, finally, a diet in which a different (open-formula) dry mixture is fed in place of that used in the control diet.

Animals.—Seventy adult and yearling female mink, allotted by chance to each of the seven experimental groups. These animals are all Bluefrost or similar mutations of little commercial value. The adults had past records of good kit production, and the yearlings are from litters of not less than four.

Discussion.—Experiments conducted at the United States Fur Animal Experiment Station have indicated that poultry waste has a very decided place in the diet of growing mink and in the summer maintenance of adults. However, re-

ports from numerous ranches indicate that the production of young during the 1950 season was considerably below normal, and in some instances was zero. It is believed that such poor production was due to the feeding of poultry waste from caponettes (birds injected with pellets of diethylstilbestrol in order to promote faster and more economical gains and tastier meat). In order to obtain some definite information as to the effect of feeding caponette waste to minks during the reproduction period, this experiment was planned.

It was believed advisable to use as a control ration the diet fed on a large ranch where the normal production of mink ran four kits per female or higher. The ranch of Fromm Bros., Inc., Hamburg, Wis., was selected as the ranch whose feeding practices were to be followed, and suggestions given by Dr. Willard Hobarts, of that concern, have been incorporated into this outline in an attempt to utilize a control diet that is as nearly like the diet fed on the Fromm ranch as possible.

Since the mixed cereal used on the Fromm ranch is of their own make and a closed formula, it was believed advisable to add another lot to the six already planned, using an open-formula commercial dog food as a check against the Fromm cereal.

That study is under way but has not been completed. The result of that study or experiment will be presented to you later in the season.

Now, my contention upon the formal brief of Mr. Parkhill, basically, is this: First of all, we are a research institution. It is our job to conduct research on problems of poultrymen and farmers and livestock producers. It is our purpose to tell them what we have, tell them what we did, and what we found, just as soon as we have the information. To all the information that we develop must be added, "This is what we did; this is what we found; this is what we think will happen." Under these circumstances, that is a weasel-worded sort of thing that most scientists put out when they put it out subject to construction.

Now, people don't like such a recommendaion. They would like it even less if we refused to divulge incompleted work.

If we kept the data in the laboratory until it was entirely completed, we would have to say to a man that we could not give him anything until we had had three generations of breeding of the animals, and that nothing would be published until after the experiment was completed.

Now, we feel that it would be very unreasonable if we were to tell our men, "You must keep your mouth shut until the experiment is absolutely completed."

Further than that, if an administrative officer said to these people that he would refuse to give them information until the studies were completed, that would be entirely unreasonable, and he would be assuming a burden that he couldn't possibly handle.

Now, we have two or three hundred divisions alone in the Department of Agriculture, and no person in the Department could be competent to review all these various subjects, and so you find the men in the field are issuing results of their experiments before they have come to a positive conclusion. We have experts, like Dr. Enders, at Swarthmore, who work cooperatively with us, and they work with our staff, and they work on nutrition and breeding, and they do an excellent job. So, when these men, who are outstanding experts in their fields, have material which they offer for publication, we do it as a service to the farmers, as in this instance. We say, "This is what we did and this is what we found. Under these circumstances, this is what we think you will find." That illustrates, perhaps, what I mean by "weasel-worded."

Dr. BYERLY. In recognition of this article to which Mr. Parkhill referred in which we refer to poultry offal for feeding mink during the summer season, Mr. Bassett in his opinion explained that preliminary feeding tests during the summer and fall indicated that poultry waste consisting primarily of heads, feet, and entrals of poultry were equivalent to and a good substitute for horse meat. Again I say that these words are weasel words and I know what the implications are. If we wait until we have arrived at a definite conclusion, until we had exhausted the subject of estrogen, if we do wait that long I am afraid we will not say anything about it for several years and I am afraid the farmers would not like it.

Are we to censor every paper or can a man say, "This is my honest opinion. These are the things I found." If there is any man competent to say what he thinks that man without qualification is Dr. Enders. I know of no one more competent to say what his observations are and who am I to say to Dr. Enders, "You must not talk."

Rather than to be strict and not permit him to give out information until it was absolutely conclusive we have felt it is in the interest of farmers to tell them what progress has been made and give them the best evidence available. That has been our attitude.

Mr. JONAS. I understand you are not challenging the authenticity or scientific value of this article, are you?

Dr. BYERLY. By no means.

Mr. JONAS. You are merely calling my attention to the course of procedure you followed. In other words, if you followed an excessively cautious practice you will never get mink.

Dr. BYERLY. Now, with respect to the actual feeding of poultry waste, as Mr. Parkhill points out, Circular 801 contains a reference to feeding poultry waste. That is, of course, very good.

You will find the same statement was issued in 1939 in regard to feeding poultry waste to mink based on farm practice which was a thing of long standing. We undertook research on this subject when consumption reach a volume and we put additional effort forth when horse meat became scarce. We are not the only ones who are experimenting with it.

Mr. JONAS. You cited some instances there of experiments conducted with both goats and cattle.

Dr. BYERLY. Yes, sir.

Mr. JONAS. That had to do with the constructive value of milk. That was very clear to me. It shows there is no interference; but there is some testimony here in the record that some of these mink when they produced their litters, the young died from want of milk.

Dr. BYERLY. Yes.

Mr. JONAS. Does you testimony produced here today offset that?

Dr. BYERLY. Judge, I would have to leave that to your judgment because I cannot say this is not true. We can only say, in view of our general experience, I cannot accept it as true until it has been demonstrated and it has not yet been demonstrated to my satisfaction.

Mr. JONAS. In other words, there is a very, very marked difference in the procreative proclivities of the animal. Some animals may make more milk. At the same time if it should be true that the mink were affected by the particular drug which dried up the milk.

Dr. BYERLY. But it may be a matter of the season. There are many things recognized that can cause failures and then it varies with dif-

ferent animals and the fact that animals are different may be important.

Mr. JONAS. Scientifically it is true that what may be a stimulant to one animal may be a depressant to another.

Dr. BYERLY. That is true.

Now, with respect to the second part whether or not the Department of Agriculture showed negligence which I believe is not the case, we have here the issuance of the warning, and I have to emphasize again that we have permitted, encouraged these people to tell the farmers and the ranchers what they know or what they think has happened, or the results of this and the results of that and that is done by a publication of their opinions and statements.

There are statements in every one of these documents that I personally feel are not very well founded but they are the opinions of these various experts and therefore I feel they are free to say them and Mr. Parkhill, I believe, will admit, that we opened the record with the warning. That was the first warning we could find in statements of Dr. Enders of the possibility of danger from feeding caponette waste as having had some effect on the mink failure in 1949.

At that time Dr. Enders was in research. He said, "Let us go to work and find out." Therefore Dr. Enders on January 6 warned. He asked that the warning be given to the mink breeders. The warning was the expert opinion of Dr. Enders.

Now, with respect to the feeding of poultry waste itself, I should like to refer again briefly to an article in 1946.

Mr. JONAS. Mr. Parkhill, you are not accusing the Government of committing an act of negligence, are you?

Mr. PARKHILL. No, sir.

Mr. JONAS. In other words, you are not charging the Government with doing something unlawful because if you were charging that you would be out of the hearing.

Mr. PARKHILL. I am not charging it at all.

Mr. JONAS. The fact that the Government issued these bulletins and recommended they be used for certain purposes was no reflection on the Government from the standpoint of its doing somewhat lawfully. You are proceeding on the theory of the ultimate in good faith but it is the old rule, whether you produce the instrumentality and set it in motion and if it has a bad repercussion then the first fellow suffers.

Mr. PARKHILL. Substantially, but I think it goes a little beyond that.

I suggest to you a lack of full coordination and I want to say very emphatically it is not at the level or on the part of Dr. Enders or on the part of Dr. Byerly, I think it was more at a level of the coordination which was within the higher level of the Department—we would have to refer to it as a higher level.

Dr. Byerly will take no offense to that attitude. Certainly it was not willful but it was a matter of a sovereign owing a duty to its people. I contend the sovereign failed in this instance or rather in both instances, in 1949 and 1950, because the record is clear and I am sure when you consider the full record it will be even clearer to you. The question was propounded to them and they had the knowledge.

Mr. JONAS. I think the point Dr. Byerly started to make is this, that the Government took on this job of carrying on its experimentation.

You can't experiment with anything until you set it in motion. You have to practice on something and that is an inherent implication in all experimentation that in order to determine whether it is worth something you must practice on somebody, for good or bad. That is the theory on which they are proceeding.

Mr. PARKHILL. That is right.

Dr. BYERLY. There is the implication of lack of diligence on our part and that is the point I am trying to speak to here.

Dr. Enders and Mr. Bassett had presented certain circumstantial evidence or opinion that mink were damaged by the feeding of caponette heads.

I say to you that the experimental evidence that stilbestrol was doing injury—it is granted that up to that time there was sufficient evidence to spur them in their experimentation in the hope that they could get better results with stilbestrol. That was the reason for studying it. They wanted to get beneficial results rather than harmful results. From the old use of estrogens there was not possible cause for anticipating feeding caponette heads to mink would bring about breeding failures in those mink.

Another thing subject to question is that 4 percent of the poultry being treated were with stilbestrol. That 4 percent would be about 20 million out of a half billion commercial chickens produced, widely distributed throughout the United States, in various sections, some in the eastern part of the United States, California and Indiana and only isolated cases in Illinois and the Middle West. The treatment was widely scattered so it would be hard to get any concentration of caponette heads in the feed used for mink. Is this something which should be precluded on suspicion when 5 percent or less and not 95 percent of the poultry are being treated? It will be a larger problem when a larger proportion of the poultry is treated and when it is used for turkeys and the problem will increase when it is used for other livestock.

I have mentioned the gains made by lambs, which was reported in the North Dakota reports.

As far as I am concerned, Mr. Chairman, I am about through unless you have some question.

Mr. JONAS. It is perfectly agreeable to me for you to finish now or we can recess here until Monday.

Mr. PARKHILL. May I say this, Judge, that I would like if I might, to have the privilege of asking the doctor a number of questions that I have noted here. I would expect to take perhaps a half hour or so to clarify some of these points from my standpoint. I throw that on the table for whatever it may be worth. The doctor and I anticipate you will be asking questions back and forth. The only question in my mind was whether it interfered with your program, or not, and I will leave it up to you.

Dr. BYERLY. If you wish to suspend, it is all right with me.

Mr. JONAS. We will resume Monday morning at 10 o'clock and finish up both sides.

Mr. PARKHILL. I would like to finish with Dr. Byerly and when I am through with him I might need to bring someone else in. However, I cannot tell that until I get through with my good friend.

(Thereupon, at 5 p. m. the committee adjourned to meet on Monday, March 5, 1951, at 10 a. m.)

MINK CLAIMS

MONDAY, MARCH 5, 1951

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE NO. 2 (ON CLAIMS),
THE COMMITTEE ON THE JUDICIARY,
Washington, D. C.

The Subcommittee No. 2 (On Claims) of the Committee on the Judiciary met in the committee room at 10 a. m., Hon. Edgar A. Jonas (special subcommittee chairman) presiding.

Mr. JONAS. We will resume hearings on the claims of Mr. Krueger and others.

You may proceed. Dr. Byerly was proceeding the other day. You can go ahead, Doctor. Continue your statement.

STATEMENT OF DR. T. C. BYERLY—Resumed

Dr. BYERLY. Very well.

If I may recapitulate a little bit then: Chicken waste has been used by mink farmers for a long time and that use has been recognized by the Department of Agriculture as early as 1939 in the yearbook based upon field observations rather than experiment.

The use of chicken waste in mink feeding entering into bulk use I can determine to have been not later than 1946.

Mr. JONAS. Did the 1939 chicken waste contain stilbestrol?

Dr. BYERLY. No, sir.

Mr. JONAS. When was it first introduced? When did you find it first introduced in the chicken waste?

Dr. BYERLY. The first permitted use of stilbestrol was in 1947. Now that action was after clearance with the Pure Food and Drugs.

Now, there is one point I would like to make. I don't have the exact date. Food and Drugs, of course, is not a part of the Department of Agriculture at this time.

Mr. JONAS. I beg your pardon; it isn't a part of the Department of Agriculture?

Mr. PARKHILL. You mean now. I don't think it is now.

Mr. JONAS. What department does it come under?

Dr. BYERLY. Federal Security Agency.

In this connection, Mr. Chairman, my remarks cannot have any bearing on food and drugs.

I should like to quote from Dr. G. R. Hartsough, D. V. N., of Associated Fur Farms, Inc., New Holstein, Wis.

Mr. JONAS. Was Food and Drugs under your department prior to 1945?

Dr. BYERLY. Yes, sir; but the date of the transfer I haven't checked. I am not certain of the date of transfer.

Mr. PARKHILL. My understanding is they were under Agriculture in 1947. We should be able to check it.

Mr. JONAS. You can check the record and clarify that later on.

Dr. BYERLY. Dr. Hartsough is a doctor of veterinary medicine degree of Michigan in 1940. He was with the Wisconsin Conservation Department from 1940 to 1942 in the State Department Disease Control Laboratory of Wisconsin from 1942 to 1944; with the Department of Conservation in 1944. Subsequently he became associated with the Associated Fur Farms, Inc., at New Holstein, Wis., from 1945 on.

Dr. Hartsough reported in the National Fur News for August 1946, at page 7, the feeding of poultry waste and I will read briefly what he said:

Our feeding trials were conducted with both foxes and mink. In the first feeding trials we fed the chicken byproducts so that it replaced all the horse meat in the diet. This diet for foxes consisted of the following:

	Percent
Frozen chicken byproducts (carno)	50
Liver	5
National Fox	18
Cod liver oil	.25
Water	26.25

For mink the ration was formulated in this manner:

	Percent
Frozen chicken byproduct (carno)	59
Liver	5
National Mink cereal	12.5
Cod liver oil	.25
Water	23.25

Mr. JONAS. I agree that is true. You and I agree about that. But nobody contends when you feed chicken waste to mink that that inherently is dangerous to the mink itself, to the health of the mink. But in regard to this article by Dr. Hartsough, how does that connect up with the injection into the food of stilbestrol?

Dr. BYERLY. The point I am trying to make, Mr. Chairman, is this, that Dr. Hartsough reported experiments in which chicken waste had been fed to mink in reproduction in 1946. Our work which was done in 1947 and published in 1948 was done with mink during the summertime, not done during the reproductive period and it was so reported.

Mr. JONAS. Are you referring to the time when your experiments were started, where you fed chicken waste containing stilbestrol to mink?

Dr. BYERLY. No; it is just with respect to the chicken waste, which is one of the contentions Mr. Parkhill introduced, that we have recommended the use of chicken waste. It was not solely the Department of Agriculture that made such recommendations. This was Dr. Hartsough on the outside who referred directly to the use of chicken waste during the reproductive period.

Mr. JONAS. You are emphasizing that the Government went into the research business in regard to the use of chicken waste and after a certain period did you say it was all right and make recommendations in its favor? Aparently there is no doubt about that and at that time, or from the time of the publication of Dr. Hartsough, were you concerned about stilbestrol being in chicken waste, or did that come up later?

Dr. BYERLY. That is correct; yes, sir.

Do we need more for the record? I do not wish to prolong the hearing.

Mr. JONAS. Use your own judgment. I am relying entirely on you in regard to that.

Mr. PARKHILL. If it will assist I will say that there was such an article by Dr. Hartsough in 1946 in which he recommended feeding chicken waste to mink with favorable results; and it was done with breeding mink during the breeding season.

Mr. JONAS. Was that connected with the Department?

Dr. BYERLY. No.

Mr. JONAS. In regard to the chicken waste fed in 1945 and 1946, did this organization feed chicken waste?

Dr. BYERLY. The use of chicken waste grew out of the activities of one big processing plant in Omaha, a very large one that saw an outlet for poultry offal and so it prepared, I think, some chicken waste frozen and canned some and offered it to the fur farmers and they moved quite a substantial amount of it. In addition, there was a casual use by fur farmers of poultry offal but this was the first substantial movement. It was established by individual enterprise, if you like. It shows that there was research in 1947 and you find experiments were conducted along about there in the summer and fall feeding chicken waste only.

Now, going further into the record, the first knowledge or alarm that we received from our cooperative agent Dr. Robert Enders of Swarthmore, was on October 18, 1949, and it was noted by a letter to Millar and we have requested the correspondence and that will probably be in the correspondence from Millar and Bassett. We expect it will be here this afternoon.

Mr. JONAS. Pardon me for the interruption, but I notice there has been a statement placed in the record by you in regard to Dr. Hartsough's education and background, and in regard to his investigations in this subject.

You have also mentioned Dr. Enders, and is he supposed to be what you might call the final authority on the subject, or one who has the last word, as we sometimes say? Is he supposed to be the man who has made the most minute research and made the most minute studies about it?

Dr. BYERLY. There is no other person in the United States, in my opinion and to my knowledge, who has done more work or better work on the physiology of reproduction of mink than Dr. Enders.

Mr. JONAS. That is putting it very concisely. Now, Dr. Byerly, don't you think we should have hte benefit of Dr. Enders' testimony here? I am not reflecting on what you do, because you understand it, but, since you make that statement that he is the man who has made the most detailed and most minute research, couldn't we get him here and have him give us the benefit of his knowledge, for this reason: This is not a claim for just a few hundred dollars, but we are talking about thousands of dollars. This claim will not only have to be processed through the special committee, but the general committee, and there will be many inquiries made as to why this claim came up, and there will be many questions raised about it. Don't you think Dr. Enders could help us, or do you think it would be embarrassing to get him down here? I do not want to do anything which you think would not be compatible. I want to ask for help.

Dr. BYERLY. You express yourself in most courteous terms. You asked Friday if the Department of Agriculture intended to call Dr. Enders as a witness, and I said we did not. That is true. But, quite obviously, we have no objection to you calling Dr. Enders, and I would be pleased to call him on your suggestion, so that we could get him here. As I say, we cannot command him to come; he is not under our administrative authority. But we can ask him to come, and, if it is the committee's opinion that we should do so, I will be very glad to go back to Agriculture and explore that possibility, and, if Agriculture does not wish to call him, or persuade him, then you are at liberty to call him.

Now I cannot express an opinion as to the desirability of calling Dr. Enders. Dr. Enders is a highly competent person; Dr. Enders is a research scientist. You asked me Thursday whether I thought Dr. Enders would want to come. Let me state it conservatively, that Dr. Enders has not expressed a desire to be a witness.

Mr. JONAS. From some of the information that was presented here Friday it is my belief that Dr. Enders could shed some important light on the subject we are now considering.

Dr. BYERLY. I have one letter from Dr. Enders to a Mr. August Genetti, on whose behalf a bill was introduced.

Mr. MACHROWICZ. And who was here Friday.

Mr. JONAS. Is the claimant here?

Dr. BYERLY. May I ask the privilege of reading this for your benefit and not for the record?

Mr. JONAS. Yes.

(Dr. Byerly read the contents of a document.)

Mr. JONAS. Well, it seems to me, Doctor, that that letter is indicative of the fact that we should get Dr. Enders down here.

Dr. BYERLY. Then it is your request that I call him?

Mr. JONAS. You make an attempt, through your Department.

Dr. BYERLY. Yes; I will be very glad to take it up with Agriculture and let you know at once.

Mr. JONAS. Mr. Lee will give you information as to how to get him here. It just takes an hour or so to get down from where he is, doesn't it?

Dr. BYERLY. A little longer. It is just outside of Philadelphia.

Mr. JONAS. How do we get Dr. Enders here?

Mr. LEE. If he will not come voluntarily, of course, we could subpena him.

Mr. JONAS. How do you take care of his expenses?

Mr. PARKHILL. I will undertake to take care of his expenses. I don't think the doctor, Dr. Byerly, should be put to that expense, when he isn't an employee of the Agriculture Department.

Dr. BYERLY. The only thing it would involve would be an informal request from Agriculture, asking him to appear on behalf of Agriculture, or whether you will ask him.

Mr. JONAS. Well, you determine that, and we will see if we cannot work out the mechanics of the situation. I am sure we can. If Agriculture does not want to bring him, then we will call him by telephone and, if necessary, issue a subpena and ask him to come here to meet these people as soon as possible.

Mr. PARKHILL. Actually, I was going to suggest that I would like to have him here next Friday. I know that the whole committee

meets on Thursday, doesn't it? I would suggest meeting this coming Friday.

Mr. JONAS. Friday, March 9, would be satisfactory to me.

Mr. PARKHILL. That would be convenient to me. I would have to stay over for some other matters for a couple of days, and Friday would be quite convenient.

Mr. JONAS. All right; we will agree on Friday, if it is satisfactory, and in the meantime we will set in motion the mechanics to have Dr. Enders here.

Dr. Byerly, you may proceed with your statement.

Dr. BYERLY. A warning was proposed by Dr. Enders on January 6, 1950, and issued on January 16, 1950. It was released to all the fur journals.

Dr. BYERLY. There has been entered into the record an article by Dr. Roberts which was conceded to be the most direct evidence, and you asked for his pedigree, Mr. Chairman, which I have obtained, if I can find it here.

I was mistaken in my dates, because January 16 is correct for the release. The title shows it was released on February 14, but this was released, according to the record, which can be substantiated, on the 16th.

Mr. PARKHILL. I thought you misspoke yourself.

Dr. BYERLY. That is true. There were two releases, and the January 16 date was correct.

You asked for the pedigree of Dr. Willard Lewis Roberts. He obtained his bachelor's degree from Milton College in 1927; master of arts from Wisconsin in 1932; doctor of philosophy in biochemistry, University of Wisconsin, 1937. He was a chemist in the State regulatory department of North Dakota from 1928 to 1930, and from 1932 to 1935; he was an assistant chemist in Wisconsin from 1930 to 1932; he was a biochemist in Wisconsin from 1935 to 1937; director of cereal research in the Post Products division of the General Foods Corp. from 1937 to 1941; biochemical and analytical chemist, research, central laboratories, General Foods Corp., 1942–45; technical director, Gaines division, General Foods Corp., 1945 to 1947; and he has worked with Fromm Bros.—I think that is the Federal Foods division—Fromm Bros., Gainesville, Wis., from 1947 to date.

Mr. JONAS. An article has been introduced in the record, written by Dr. Roland K. Meyer. What is his pedigree?

Dr. BYERLY. Dr. Meyer has been professor of zoology at the University of Wisconsin since 1938. Prior to that time he was assistant professor of zoology at the University of Wisconsin from 1935 to 1938. From 1930 to 1932 he was a national research fellow on the staff of the anatomy department, medical school, University of Rochester, Rochester, N. Y.; and in 1933 he had a special fellowship in the anatomy department at Rochester. In 1933–35 he was on the research staff of the Upjohn Co., Kalamazoo, Mich. His field of research and teaching has been embryology and endocrinology, particularly in the field of endocrinology of reproduction. At present he is teaching embryology and endocrinology, and does research and supervises the research work of approximately 30 graduate students in the field of endocrinology.

Mr. PARKHILL. I have introduced in the record Dr. Roberts' article, What Happens When Pellett-Inserted Chicken Heads Are Fed to Mink? He found that a very small quantity caused harm.

Dr. BYERLY. Will you concede that in that same article Dr. Roberts said he obtained excellent results from feeding poultry waste?

Mr. PARKHILL. I will concede not only that but I will concede within certain limitations that the percentage of poultry waste in the diet, if it does not have this drug in it, is a good feed. I will concede that. In other words, I concede both.

Dr. BYERLY. You have expressed yourself as interested in the truth. May I make a reservation at this point?

Mr. JONAS. Yes, sir.

Dr. BYERLY. It has been known since the publication of papers in 1930, cited by Dr. Harold Burrows, C. B. E., Ph. D., F. R. C. S., in his book, Biological Action of Sex Hormones, printed at the University Press, Cambridge, England, in 1949, on page 298, discussing: Sources, metabolism, and excretion of estrogens. One of his sources was the ovary. A further source of estrogen was given as beet-root seeds, potato tubers, parsley roots, and yeast. Estrogen in the amount of 40 to 600 international units has been extracted from a kilogram of honey, and 6,000 international units have been obtained from 1 kilogram of dried sage. It has been found that there are from 1,000 to 2,000 international units of estrogen in a kilogram of mineral oil, and 8,000 m. u. in a kilogram of naphtha. Even in natural asphalt there were found 10,000 m. u. in a kilogram. Estrogen was also found in coal. Burrows cites a 1930 report by Juhn Gustavson (p. 305) that the feces of a hen in the springtime may contain 700 to 1,000 rat units of estrogenic activity per kilogram.

Mr. JONAS. Now, when you speak of estrogenic substances, that has to do with the stimulation of the reproductive glands?

Dr. BYERLY. I have here a volume on Vitamins and Hormones—Advances in Research and Application, edited by Dr. Robert S. Harris, professor of biochemistry of nutrition, Massachusetts Institute of Technology, Cambridge, Mass., and Prof. Clarence B. Thimann, professor of plant physiology, Harvard University, Cambridge, Mass., published by the Academic Press, Inc., of New York, in 1947. In this work there is a study on Effect of Exogenous Estrogens on the Male Mammal, by Emmens and Parkes. They are Dr. C. W. Emmens, at the laboratory known for medical research at Hempstead, London, England, and Dr. A. S. Parkes, who is a research worker at that same institution. Quoting from page 234, under the subheading "Chemical structure of estrogen," reporting on the quantitative difference of the activity between various synthetic estrogens, which would include diethylstilbestrol, they say:

> Diethylstilbestrol is the best known of a series of highly potent synthetic estrogens prepared by Dodds and his coworkers. Its activity is between that of estrone and that of estradiol; the exact ratio again varies according to the test method. It has not been found in nature.

They go on further and say:

> Hexestrol, also prepared by Dodds, has about the same potency as diethylstilbestrol. Both of these synthetic compounds differ from natural estrogens in being highly active by mouth, but otherwise resemble them in biological action to a remarkable degree. Reports of quantitative difference in activity between these synthetic estrogens and members of the estradiol series have not been substantiated.

Mr. JONAS. What is the anatomical application of that? What use could be made of that?

Dr. BYERLY. The estrogenic substances do many things. In the first place, it brings about pressure on the uterus for impregnation. It is accountable for one of the hormones, accountable for the physiological behavior of the human female in the menstrual phenomena. I said, it is one of the hormones, and it has to do with the growth of the mammae tissues. It has to do with the secondary female characteristics in general.

As I pointed out, it also occurs in the male. Its functions there are less well understood.

Likewise, male hormones occur in the female, and there is apparently a balance of these hormones which determines the physiological state of the individual.

No one of these hormones works by itself.

Mr. JONAS. In other words, natural estrogenic substances are in the glands?

Dr. BYERLY. Exactly.

Mr. JONAS. And diethylstilbestrol stimulates the glands?

Dr. BYERLY. It does not stimulate the production of estrogenic substances by the body. It may, indeed, inhibit the production of estrogenic substances by the body. It is substitutive or additive rather than transforming into estrogenic substances.

Mr. Parkhill asked me in regard to its effect on the ovaries. I refused to concede that, but I checked over out at Beltsville some current experiments that we are conducting on poultry.

There were implanted 12 milligrams of diethylstilbestrol. There were 25 such females implanted. There were 11 of the same age and from the same hatch used as controls.

On March 3 there remained 22 in the experimental lot, and 1 was sick. There remained 6 in the control lot. In other words, 5 had died.

No treated live bird and, indeed, no control bird that lived to sexual maturity, had failed to lay. In other words, all 22 of the birds that had been implanted on November 1 had laid eggs, although there was 1 sick bird that was not laying on March 3. There was only 3 days difference in sexual maturity, which was not significant. The eggs per bird for the period were substantially identical, 19 eggs per hen in each group.

It is not to be concluded that the administration of diethystilbestrol will necessarily interfere with ovulation.

Mr. JONAS. May I ask you another question here? This is to clear up something in my mind. Are we agreed on the time when you first gave more than passing attention to the feeding of chicken waste to mink? Was it back in 1939?

Dr. BYERLY. No, sir. Will you repeat your question?

Mr. JONAS. When did the Government give any time or Agriculture give any time to the over-all program of feeding chicken waste to mink?

Dr. BYERLY. 1947.

Mr. JONAS. Prior to that time, Agriculture took no part in processing it at all?

Dr. BYERLY. No, sir.

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Mr. JONAS. If a mink farmer fed chicken waste, he did it on his own?

Dr. BYERLY. That is correct.

Mr. JONAS. We found testimony, doctor, that there are a series of mink pens stretching along the Illinois area that are involved in this claim. Most of the claims that we have here are along in the Illinois and Indiana area.

Dr. BYERLY. I think they are evenly divided between Illinois and the northeastern United States.

Mr. JONAS. We have some from Illinois and we also have some claims from up in New York.

Dr. BYERLY. I think there are two in New York and one in Pennsylvania.

Mr. JONAS. Now how are we going to reconcile the facts? Maybe you can explain it to me.

Up to 1947, it is to be assumed some chicken waste was fed, and, while they may have fed chicken waste, so far as we know, there was no interference with the birth rate of mink, that is, as far as the records go.

Then, in 1947, they began to feed chicken waste in larger quantities, and under the supervision of the Department of Agriculture, we will say, you gave some attention to it, and you also had entered into an experiment of putting a pellet into the chicken's head which contained stilbestrol; am I correct?

Dr. BYERLY. There is an assumption implied in your remarks.

Mr. JONAS. Am I correct that that is the general procedure that took place?

Dr. BYERLY. There is one statement I would not concede, Judge, and that is that mink production was as you have described it, normal, up to that time.

Mr. JONAS. Well, we haven't any evidence to the contrary, have we?

Dr. BYERLY. I believe it would be possible to introduce a series of records showing where mink breeders have had failures.

Mr. JONAS. But these are specific cases. These men have testified that there has been a falling off in the productivity of the animals, that is, particular individuals. Now, if it were confined to just one section or area, it would raise a question in my mind, but how do you account for the fact that this falling off in the production of mink extended from Illinois clear across to New York? The falling off of mink production occurred in different areas. Now, what produced that particular propensity in the particular animals that we are talking about, not only in one spot but clear across the country, that were fed chicken waste?

Dr. BYERLY. At your request Friday, Judge, you asked me to concede that there was a high presumption of the probability that the feeding of caponette offal containing residual stilbestrol had occasioned difficulty in breeding mink. I don't concede that that has been demonstrated—that feeding caponette offal has done that. I concede that there is a high probability.

Mr. JONAS. But that is based on the testimony before us. But it is conceded as a high presumption that if you have caponette heads in the chicken waste, with stilbestrol pellets in it, that there would be a definite connection between the use of that waste and the nonbreeding of that mink that ate it. We are agreed on that to that extent?

Dr. BYERLY. That is right.

Mr. JONAS. All right.

Dr. BYERLY. The dosage has been referred to in the record with respect to animals, and some very sorry cases cited of the presumptive effect in humans.

In that connection I should like to introduce into the record, if I may, a brief statement by Dr. A. R. Abarbanel, of the College of Medical Evangelists, Los Angeles, Calif. He graduated from the Long Island College and was an instructor in research in the department of obstetrics and gynecology at Long Island College. He is a member of the conference on fertility that took part in the discussion of the problem of fertility in the proceedings of the conference on fertility held under the auspices of the national committee on maternal health. These proceedings were edited by Earl T. Engel and were printed by the Princeton University Press, of Princeton, N. J., in 1946. Dr. Abarbanel said:

I just want to add one word about the polycystic ovaries in the human. There seems to be a more or less uncommon finding of these. A couple of years ago we reported the management of these cases following the suggestion and use of large doses of estrogen. We never found ovaries as big as Dr. Hammond found in the cow. We did find very large polycystic ovaries, which until this time were treated clinically by resection of the ovaries; but by giving stilbestrol in doses usually running around 5 milligrams a day and checking the patient once or twice a week, we found that these overian cysts or polycystic ovaries regressed in size. On stopping the stilbestrol after a total of 100 to 1,200 milligrams, we found, as a rule, that within 3 weeks after stopping the stilbestrol, or waiting until there was an estrogen deprivation, there was a secretory endometrium in practically every case. We had an 18-year-old patient who had been curetted five times for functional bleeding, and each time showed a so-called Swiss cheese endometrium, that is, marked endometrial hyperplasia. After this treatment with stilbestrol, 1,200 milligrams, to make the ovaries regress, we found a secretory endometrium. This patient is menstruating regularly, and two or three biopsies taken at the first day of menstruation showed she was still ovulating.

Mr. JONAS. I saw an article where they tried to use it in cases of hepatitis; but what we want, secondarily, to know is what it does to the sexual organs.

Dr. BYERLY. I think that is correct. There were also references made to cancerous activity of estrogenic substances. That was an allegation that is contrary to statements to be found on page 356 of the Action of Estrogens on the Accessory Genital Organs, in Biological Actions of Sex Hormones, by Dr. Harold Burrows, to whom I referred previously. He states:

Estrogens have been found to benefit patients who are suffering from cancer of the prostate by relieving the pain and causing the growths to shrink. To some extent, the relief thus brought about may be attributed to shrinking of the accessory male generative tissues and the reduction of pressure caused in this way. But the benefits seem to extend beyond this and to include a shrinkage of the cancerous tissue itself. If this be so, it suggests that cancerous prostatic cells are not always completely independent of hormonal influences, as some of us have thought, and it may even be found that their dependence on these hormones is so pronounced that the malignant cells will not grow at all if the supply of androgen is suppressed by castration or by the continued supply of estrogen. Apropos this matter, it may be noted that prostatic cancer is unknown in eunuchs and eunuchoids (Moore, 1944). In the absence of experiments on animals, research into this important matter has been difficult, inexact, and therefore inconclusive; but a method of inducing glandular-celled transplantable prostatic cancer in mice has been discovered (Horning, 1946), and it will now be possible for exact laboratory investigations of the problem to be made.

So, that shows that prostatic cancer was checked by the use of estrogens.

Now, I am not competent to testify in the medical field, and I am only calling attention to these things.

By the way, should I put my own pedigree in?

Mr. JONAS. Yes. I thought you would start off with that.

Dr. BYERLY. I am not skilled in these matters.

Mr. PARKHILL. I will concede he is a good man.

Mr. JONAS. The evidence is that he is, and I would like to have his record.

Dr. BYERLY. I am embarrassed to do it. I think Mr. Knauss has my record.

I am T. C. Byerly, animal husbandman in charge of the Animal Husbandry Division of the Bureau of Animal Industry of the Agricultural Research Administration of the United States Department of Agriculture.

I hold the degrees of bachelor of arts, master of science, and doctor of philosophy from the State University of Iowa, 1926; instructor in zoology, University of Michigan, 1926–27.

I specialized in the field of experimental embryology and phsyiology. I was a physiologist in the Bureau of Animal Industry from 1929 to 1937, being charged with research in physiology of development and of reproduction.

I was a professor at the University of Maryland from 1937 to 1941.

From 1941 to 1947, I was in charge of research in poultry, husbandry, research in physiology, and research in genetics, and research in nutrition in the Bureau of Animal Industry.

Since 1947, I have been in charge of the Animal Husbandry Division, where my principal responsibilities are to develop research in livestock production.

I am a winner of the Borden award in 1943.

I am a member of the Division of Biology in Agriculture, National Research Council, and a member of the governing board of the American Institute of Biological Sciences. I am a fellow of the American Association for the Advancement of Science and a fellow of the Poultry Science Association, a member of the Society for Animal Production, the American Society of Zoologists, the Society for Experimental Biology in Medicine, and the Academy of Medicine of Washington, D. C.

For the present, I believe I have exhausted my direct testimony.

Now, there is one question you asked me to clear up, and that is who was the Director of the Agricultural Research Administration in 1943–44. I stated it was Dr. W. D. Lambert. I find it was Dr. E. C. Auchter. (See p. 41.)

Mr. JONAS. All right. The record may show the correction.

That substantially concludes what you want to offer now for the record. Later on you are privileged to develop any circumstances that you may think necessary.

Do you, Mr. Parkhill, want to ask any further questions?

Mr. PARKHILL. I would appreciate the opportunity.

Dr. Byerly, you have just referred to Dr. A. R. Abarbanel as an authority on the subject of "Hormonal Control of Ovulation." I take the liberty of quoting a statement by him and his coauthors that appeared in the Journal of the American Medical Association, volume

121, at page 1123, in which, of course, he is speaking of the treatment of human beings, and ask you if you agree with this statement—I am quoting:

Clearly, then, a daily dose of 1 mg. is a relatively large dose—

He is speaking of stilbestrol.

Dr. BYERLY. I think I would not like to express an opinion nor did I intend to express an opinion with respect to the statement that I read into the record, but only to report a statement.

Mr. PARKHILL. In that event, I should like to show you—I don't have the article with me, but I should like to show you a verbatim quotation from the article to which I have referred, by Dr. A. R. Abarbanel, who is a member of the Association for the Study of Internal Secretions.

Now, Doctor, if I understood you rightly, you spoke of having confidence in the men in the field and of not censoring their reports. So you testified the other day; and, as a matter of fact, they are censored; is not everything that they want to publish approved by the Bureau of Animal Industry?

Dr. BYERLY. The process of approval is an examination by our editorial people for polishing, for correct use of English, and an examination for logic. No one person can examine research results, no matter how skilled he is, without direct knowledge of the circumstances under which those data were gathered, and have an opinion which is superior to that of the competent research man himself. So, in reviewing research work, the benefit of any doubt is resolved in favor of the research man, because he is the man who collected the data. He is the man who should have the best opinion about them. Further than that, in the case of an opinion except where policy matters are involved, I believe that a research man has a right to express his opinion.

Mr. PARKHILL. It is a fact, however, that while that may be your conception on the basis upon which the Chief of the Bureau of Animal Industry makes his decisions, to get right down to my question, it is a fact that the Chief of the Bureau of Animal industry decides whether or not the views of a research man may be published; isn't that true?

Dr. BYERLY. Yes, sir.

Mr. PARKHILL. As a matter of fact, I believe there is evidence here that an article submitted by Dr. Enders in 1949 for publication was prohibited in the form submitted.

Dr. BYERLY. For stated reasons.

Mr. PARKHILL. Now, you also stated, I believe, that the recommendation in regard to the feeding of chicken waste contained in circular No. 801, which is the circular issued by the Department of Agriculture in September 1948, was copied from a 1939 publication. Is it not true that the Department fattening experiments to which you have referred, where chicken waste was fed to mink, were made shortly before the publication of circular No. 801?

Dr. BYERLY. That is true.

Mr. PARKHILL. Were those experiments made by the Department disregarded when it prepared that circular?

Dr. BYERLY. Not at all.

Mr. YARKHILL. All right. Now, you have stated the recommendations that you made were weasel-worded, and I want to say that I appreciate your candor. You spoke of the recommendation for the feeding of chicken waste to mink, and, while you mentioned chicken waste being fed only in the summer and fall, the recommendation in that respect in circular 801 is not so restricted; is it? There is nothing weasel-worded about it? What it says in circular No. 801, at page 19, is:

> Chicken or turkey heads (with beaks chopped off) and entrails make good mink feed; also jackrabbit and muskrat carcasses (during trapping season) are good. This material should be fresh and handled in a sanitary manner.

Dr. BYERLY. Yes. The weight to be attached to the recommendation in circular 801 is that it calls attention to the fact that poultry waste may be fed as a protein substitute.

Mr. PARKHILL. I have it right in front of me.

Dr. BYERLY. Context is important.

Mr. PARKHILL. I would be glad to have you refer to anything in the context that in any way warns in regard to this matter we are discussing, which I read to you. It says:

> Chicken or turkey heads (with beaks chopped off) and entrails make good mink feed.

You stop right there. Shouldn't there be a qualification in circular 801?

Dr. BYERLY. Insofar as I know, circular 801 contained no warning with respect to the use of caponette waste.

Mr. PARKHILL. Thank you.

Now, similarly referring to the recommendation published in July 1949 in the National Fur News, in an article, as I recall, by Mr. Bassett, in which he refers, at page 29 of that magazine, to the feeding of chicken waste, is there anything weasel-worded or qualified about that recommendation?

Mr. JONAS. What document are you reading from?

Mr. PARKHILL. It is the July 1949 issue of the National Fur News, and the article is by Mr. Bassett. It is entitled "Practical Economics in Feeding Mink Kits."

Mr. JONAS. All right. We will make reference to it as exhibit 19.

Mr. PARKHILL. Without reading the whole article, I will read just several paragraphs of the article which seem pertinent:

> The purpose of this research was not to change the feeding practices of mink ranchers who had ample supplies of old horses, packing-house byproducts, or fish, available at low prices. Rather, it was to determine what products were readily available at little cost that could satisfactorily replace in part at least, the meat portion of the mink diet when meat was scarce or no longer available. That time is rapidly approaching in the United States, and you perhaps have a similar condition in Canada.
>
> Our standard price for old horses at the station for many years has been $5. Now, with dog and cat companies bidding against one another for old horses and paying from $30 to $40 each at auction, the mink farmer in our region must pay at least those prices if he is to obtain any of the product. What can be used in place of horse meat? What is available at prices he can afford?
>
> One product, formerly thrown out, concerning which you have probably heard a great deal, and which appears to hold great promise, is poultry waste. This consists primarily of the head, feet, and entrails of chickens, although the heads and necks, as well as the entrails of turkeys, are also very desirable for feeding mink.

One year's work with growing kits has shown that poultry waste gave a faster initial growth than horse meat when these two products each constituted 35 percent of the diet. Just prior to pelting there was no significant difference between the groups in average weight or in quality of pelt produced. A complete report of this experiment, including the safeguards that must be observed in feeding the product, was published in the Canadian and American fur-farming magazines last summer and fall.

This article seems to me to be a general endorsement. The word "promise" occurs there, and there is a reference to—

One year's work with growing kits has shown that poultry waste gave a faster initial growth.

Dr. BYERLY. I conceded the implication on Friday. It was a piece of work with limited significance.

Is a man to be limited to that short segment that he has examined? Should he be limited absolutely to his conservative thinking? Should you say that this man should not have said anything about growing mink at this time, or that there should have been an implication of inherent danger, or that he should have entered a denial? Isn't it a matter of judgment and opinion?

The usual practice, I believe, when a man addresses an audience is to try to interpret his results so that his opinions and his evidence is apparent to them. It is not always possible to distinguish between evidence and opinion.

Mr. JONAS. Dr. Byerly, the Bassett article is an overstatement rather than an understatement.

Dr. BYERLY. I would like to point out that the language in the article was conservative. It was a conservative statement. I concede that an implication might be derived from those statements.

Mr. Parkhill asked me to read this statement. Here it says "promise"; here it says "One year's work"; and here it says "with growing kits." This is a limited endorsement and not a general endorsement. There may be other language there, Mr. Parkhill.

Mr. PARKHILL. If you state, Dr. Byerly, that this is a limited endorsement, you will agree that nothing is said about limiting it to the summer and fall. The words "summer and fall" are not used. Is that true or isn't it true?

Dr. BYERLY. No. It says "growing kits."

Mr. PARKHILL. I beg your pardon. Does it say anything here that you should feed only in the summer or fall, or is there any reference made to the summer and fall?

Dr. BYERLY. That is my point. Kits grow in the summer and fall.

Mr. PARKHILL. In referring to growing kits, that has no reference to the statement above that chicken and turkey waste are very desirable for feeding mink; it has deference to the growth rate of the mink; has it not?

Dr. BYERLY. That is correct.

Mr. PARKHILL. Adult mink apparently don't have a great deal said about them of any significance; do they?

Dr. BYERLY. I did not disagree with that statement.

Mr. PARKHILL. So that, while this article does actually state about the growing kits, it speaks solely in connection with their growing rate. Another purpose it gave was a faster rate of growth.

Dr. BYERLY. That is correct.

Mr. PARKHILL. That statement was made for the purpose of guiding and advising mink ranchers; wasn't it?

Dr. BYERLY. That is correct. May I point out the date of this?

Mr. PARKHILL. The date is July 1949.

Dr. BYERLY. The first record we have so far been able to show our concern in the caponette problem was October 1949.

Mr. PARKHILL. When you spoke of the release which was subsequently published in November 1948 in the American Fur Breeder as being weasel-worded, referring to the fact that there was a mention of feeding tests in the summer and fall, isn't it true, Doctor, that while the tests were made in the summer and fall the conclusion drawn by the author was that poultry waste consisting primarily of the heads, feet, and entrails of chicken obtained fresh from dressing plants can be satisfactorily used either as a balance for or a substitute for horsemeat?

Dr. BYERLY. I think I will concede this. Perhaps I will ask you to concede too, that what an article means to a reader can only be determined by that reader. I would also concede, Mr. Parkhill, if I read an article I look for two things: First I look for evidence and then I look for opinions.

I would say that the evidence presented in this paper refers to growing kits in the summer and fall. I would, therefore, state that evidence has been produced only with respect to that period, and that no evidence, only opinion, has been presented beyond that period. Again, I do not wish to defend it, nor do I think it needs to be defended.

It is true and correct that the opinions of Charles Bassett and Robert Enders with respect to mink are expert opinion. We know opinions are eventually derived from evidence and experience, and we know that opinions sometimes overreach themselves.

Mr. JONAS. What I am trying to get at is this: What you have literally in the article is one thing. The whole article is based on the evidence that the man has, plus his personal opinion, and that is in the writing. Now, you don't read it so much from the literal terms of the article, as to what prompted a man to come to that definite conclusion or reason in those premises.

Dr. BYERLY. You are quite right, Judge. With respect to Bassett and Enders, they have shown unusual zeal and interest in field problems and field experience of the mink breeder. They have done their utmost, far beyond the requirements imposed on them as employees or cooperators of the Department of Agriculture in exerting themselves to try to find answers and helpful information for the mink breeders. Their motives are of the highest and their diligence is of the greatest.

Mr. JONAS. No doubt you are familiar with researches made on insulin, which, I believe, was carried on experimentally by California University prior to the time that it was put to practical application. There were quite a number of articles on the possibilities of the use of insulin in regard to diabetic cases.

Dr. BYERLY. Yes, sir.

Mr. JONAS. At the start, the people who acted on the advice contained in the first articles published regarding insulin had to rely upon the opinions expressed in those articles in order to prove as nearly as possible these experiments that these men were advocating.

Dr. BYERLY. Judge, you raise a very important issue, and it applies to all research in the laboratory: The final test must be in application, and it is also concededly true that it does not always hold up. That is true in practically all cases.

Mr. JONAS. The American Medical Journal research men have advocated and urged that some drug will cure specific things, and then they have to take it all back later on. Antihistamines were touted as an actual cure for colds. They have had to take it back because, in the final analysis, they found it is not true. That is what develops when these drugs are tried out experimentally.

Dr. BYERLY. With antihistamine, my wife uses it and gets a great deal of comfort from it.

Mr. JONAS. I use it for hay fever. It is the best means I have so far had, but in regard to it being a cure for colds, it has not been established yet that it will do that. It has, of course, good virtues, and in other fields it works out very well.

Mr. PARKHILL. I trust it is beside the point to show that there is no contention on our part that chicken waste with the absence of the drug makes poor feed.

I assume, Dr. Bylerly, when we speak of research, it is of different kinds. We may have experiments on rats and dogs and have that application later on humans, before we know whether the indicated results will work out satisfactorily with human beings; is that right?

Dr. BYERLY. Yes.

Then, there is another point which is pertinent, that in the present state of our knowledge, the total amount of estrogenic activity in the diet cannot be stated by analysis, even as to a single ingredient. I have previously pointed out that estrogenic activity is very generally distributed.

Mr. PARKHILL. I would like to make a request. Dr. Byerly has given his direct testimony. I would like to ask that during my cross-examination we stick to my questions.

Mr. JONAS. We are hearing this in an informal manner, Mr. Parkhill; we are not governed by the rules of evidence.

Mr. PARKHILL. But it will probably save time.

Mr. JONAS. Dr. Byerly, you have made a statement in regard to the issuance of bulletins and publications. When you issue a document under the jurisdiction of the Department of Agriculture, my question is as to how much authenticity can be given to it. We assume it is authentic. That means that you have the respective writers connected with your organization. We will take it all for granted. Then you made the statement, however, that the useful application of what is recommended in that article is largely based on the opinion expressed by the man who wrote it, how can we determine how authentic it is?

Dr. BYERLY. The Chief of the Bureau says, in effect, "This is a man I have confidence in; I think it is all right."

Mr. JONAS. If that article by one of your employees is on a subject that takes in an experiment that ultimately is very beneficial in its practical application, where it has resulted in absolute bona fide good, and it does what your employee represents it to do, then the Department of Agriculture gets the credit for it.

Dr. BYERLY. That is correct.

Mr. JONAS. Now, if you get credit for an article, assuming you put out an article, and this other article, on the other hand, contains certain recommendations, the ultimate results of which prove detrimental, then does not the rule work both ways? In other words, if you should get the benefit from what you do, you should also suffer the consequences.

Dr. BYERLY. That is a point, Judge, that I think is novel.

Now, granting the request of Mr. Parkhill to stick to the subject, may I ask his forgiveness.

Mr. JONAS. I am sure he does not mean literally what he says.

Dr. BYERLY. In the newspapers, and that is all I know about it, there have been a great many statements about rain making. Is the agency that paid a man's salary to work with an iodine vapor method of alleged rain making responsible for the consequences of his success or failure in producing rain and for the effect upon his neighbors who have cut their alfalfa the day before and then it rains?

Mr. JONAS. If it was done under the jurisdiction of the Government. In other words, if you send a man in the air who says, "I can make it rain today or tomorrow," and a man pays you for that phenomenon, and then you fail to produce what you represented, and the man suffers thereby, you would say that the alleged rain maker was responsible.

Dr. BYERLY. But I ask you if this point has been decided. I am asking from ignorance. Has this point been raised in our courts? Has liability been established? Is it a matter of principle?

Mr. JONAS. Well, it has, with reference to airplanes flying over a fox field, where the vibrations have killed the kits. They have recovered in various courts and from various branches of our Government. They have recovered damages by reason of that. I know that much and I cannot go any further than that. My knowledge does not go any further than that, but I know there is a precedent in regard to vibration and noise from airplanes flying over a production field where foxes were killed. You are familiar with that.

Dr. BYERLY. I am familiar with that.

Mr. JONAS. Isn't that somewhat analogous to what we are talking about? I think you know what we are talking about.

Dr. BYERLY. I think the analogy is not very close. The analogy would be better had the Government agency published an account of the exposure of foxes to noise and stated that noise is of no concern to foxes. Do you know of any research showing that noise does disturb foxes?

Mr. JONAS. Well, we get right back to the question of circumstantial evidence, and your presumptions don't win.

Dr. BYERLY. Yes, sir.

Mr. JONAS. You say that there is a strong presumption that this stilbestrol had something to do with nonproduction of the mink.

Dr. BYERLY. I concede it.

Mr. JONAS. Any recommendation would come from positive evidence, but a presumption, standing alone, is like circumstantial evidence; isn't that true?

Dr. BYERLY. Yes, sir. And as I understand Mr. Parkhill's contention, it is that we were negligent in not warning the mink farmers of the probable effect of feeding caponette waste to their mink.

Mr. JONAS. I thought you had been in accord.

Mr. PARKHILL. You better state that over again, because I don't think you said what you meant.

Dr. BYERLY. As I understand it, Mr. Parkhill's contention has grown, and he is now contending that the Department of Agriculture was negligent in failing to warn mink farmers at an earlier date of the possibility, in feeding caponette waste, of injuring the breeding performance of their mink. It has been my duty and obligation to show that our people were diligent and that there was no reasonable ground for expecting either that any considerable amount of caponette waste would enter into mink feed or that, if it did enter, it did not enter in such quantities as to justify us in issuing any warning.

Mr. JONAS. I do not understand it that way, Dr. Byerly. I may be confused about the issue, but, as I understand the issue, the contention of the claimant is this, that the Department of Agriculture recommended a certain food product as a substitute for horsemeat for mink. That is No. 1.

Dr. BYERLY. Yes, sir.

Mr. JONAS. That the Department of Agriculture in their research developed a pellet containing stilbestrol.

Dr. BYERLY. Yes, sir.

Mr. JONAS. And that that pellet was inserted in the head of the capon and the waste from those capons ultimately was processed into this food that you recommended as a substitute for horsemeat, and the fact that you permitted it to go on the market after the chickens had been implanted with this powerful drug, which we concede here is enough, if given, that it will affect the productive organs of the animal, and is the basic cause for making the mink nonproducing.

Isn't that what you are trying to get at, Mr. Parkhill?

Dr. BYERLY. The Department of Agriculture did not do the research on diethylstilbestrol and its effect on chickens.

Now, if evidence is required with respect to the jurisdiction of the Department of Agriculture with reference to the land-grant colleges and the experimental stations, then I would have to ask you to permit me to go to the colleges and say you wanted a witness to explain the work done in the land-grant colleges. It is not done by the Department of Agriculture.

Mr. JONAS. But it was done under your supervision and consent. In other words, it was interlocked with the work that the Department of Agriculture was carrying on.

Dr. BYERLY. With respect to this work, I am not competent to testify. With respect to the relationship between the Department of Agriculture and the experiment stations, that point was put into the record by Mr. Parkhill, and I am not competent to testify on it. I would have to go back to agriculture and have them produce a man who could speak on the point.

Mr. JONAS. Of course, I am assuming there is a close relationship of collaboration between the experiment stations that are instituted by private enterprises or, we will say, municipal enterprises, like universities, and the help and cooperation that they get from the Department of Agriculture. In other words, the experiments are interrelated.

Dr. BYERLY. Judge, I am not permitted to testify on that point. I don't think I should.

Mr. JONAS. Didn't you testify Dr. Enders, while not directly connected with your bureau, yet he carried on experiments in cooperation with your bureau?

Dr. BYERLY. That is a different point. Dr. Enders is a cooperative agent of the Bureau of Animal Industry with whom we work directly. It is not the same case as one of us working directly under Federal grant funds. I simply cannot testify on that point; I am not competent.

Mr. JONAS. All right. Go ahead, Mr. Parkhill.

Mr. PARKHILL. Just in passing, there are in evidence here two papers published by different manufacturers of these pellets, in both of which they claim that the administration of this drug to pullets and hens will prevent the hens from laying until the pellet is completely absorbed and the effect of the drug has worn off. Do I understand the drug manufacturers are mistaken in that?

Dr. BYERLY. I will state for the record that in our experiments at Beltsville with the feeding and injection of 2 milligrams of diethylstilbestrol daily, that did not stop egg production, which is important. I would also state, so that you can reconcile it, that various experimenters have found different results, and I would suppose that the statement you refer to is one leaning on the side of conservatism. I would say there is direct testimony produced from experiments that this certainly is not always necessarily or even typically the case.

Mr. PARKHILL. Can you concede that there is evidence the other way?

Dr. BYERLY. There is some evidence, yes.

Mr. PARKHILL. Now, in practice, Dr. Byerly, do not poultry raisers implant their entire flock when they use the drug, both male and female?

Dr. BYERLY. I believe it is true.

Mr. PARKHILL. In other words, it has a fattening effect on both male and female chickens?

Dr. BYERLY. That is true.

Mr. PARKHILL. It is not limited solely to males?

Dr. BYERLY. That is correct.

Mr. PARKHILL. Now, from the Department's reports it appears that since 1947 it was known that 3 milligrams of diethylstilbestrol would hamper reproduction in mink, and that there was also a residue of from 1 to 5 milligrams of diethylstilbestrol in a single treated hen. Would not this knowledge have warranted some caution in recommending, in 1948 and 1949, that chicken waste be fed to mink?

Dr. BYERLY. I can say to you honestly and truthfully that I have expressed my confidence in the honesty and diligence of Mr. Bassett and Dr. Enders, and it appears from the record that in the summer of 1949 they first became suspicious.

I would also state for the record that the man in charge of our poultry section there stated as a positive statement that we were not aware of any probable danger, that we were not aware that any concentration in the caponette waste was likely to be in such amounts as might be dangerous, even based on any knowledge of possible effects of stilbestrol. I may also assert with some confidence that with respect to persons who are charged with research responsibility, it is my opinion that we are as well informed with respect to what goes on in the poultry industry as may reasonably be anticipated. In

other words, we exert our diligence in knowing all that goes on in the poultry industry.

Mr. PARKHILL. Dr. Byerly, the experiment that led to the discovering that 3 milligrams of this drug would hamper reproduction in mink was made by Dr. Enders.

Dr. BYERLY. Yes, sir.

Mr. PARKHILL. Dr. Enders did not make the feed trials with mink at all, did he? That was done by Mr. Bassett.

Dr. BYERLY. With stilbestrol.

Mr. PARKHILL. No; I am speaking of the recommendation. He made recommendations in regard to the feeding of poultry waste. That was Dr. Bassett.

Dr. BYERLY. That is correct and Dr. Enders was completely familiar with that work.

Mr. PARKHILL. The work was done by Dr. Bassett.

Dr. BYERLY. That is correct.

Mr. PARKHILL. The work of both men cleared through a central agency in the Department of Agriculture, did it not?

Dr. BYERLY. That is correct.

Mr. PARKHILL. And so did the publication of the recommendation for the feeding of poultry waste?

Dr. BYERLY. That is correct.

Mr. PARKHILL. So that whatever may have been known to either Mr. Bassett or Dr. Enders from their own experimentation, there was a higher official in the Department of Agriculture and above the research level and above you—I am not trying to put it on you—who was familiar with all of these facts and all of this work. Isn't that true?

Dr. BYERLY. May I read for the record?

Mr. PARKHILL. It seems, Judge, it can be answered "Yes" or "No."

Dr. BYERLY. That is the point. This is pertinent. This is a memorandum from Robert K. Enders, Swarthmore College, to Mr. Charles E. Kellogg, fur-farming investigation, under date of October 3, 1950.

(The letter of October 3, 1950, is as follows:)

OFFICE MEMORANDUM, UNITED STATES GOVERNMENT

OCTOBER 3, 1950.

To: Mr. Chas. E. Kellogg, Animal Husbandry Division, Bureau of Animal Industry, Beltsville, Md.
From: Robert K. Enders, Swarthmore College (RKE).
Subject: Earliest published information on feeding diethylstilbestrol.

In reply to your memorandum of September 25 on stilbestrol in mink production you are quite right that the earliest published information on the feeding of stilbestrol to mink was in 1949. In our recently published article on the subject I did not differentiate between the work on feeding and injections: First, because in a popular article it would have required too much hedging and, secondly, because it has been proved that the results in injection and feeding of diethylstilbestrol are the same, although the dosages may be different.

It must be a relief to you to find that the correspondence on this subject is slowing down. We now have many more serial sections of our experimental animals so if this flares up again we will be in a position to supply microphotographs. One of my purposes in going to Washington is to discuss with Colonel Jones his findings on the mink shipped to him by Hertshough.

Mr. PARKHILL. I don't think that answers my question.

Mr. JONAS. Will the reporter read the question?

(The reporter read the question as follows:)

Mr. PARKHILL. Certainly, whatever may have been known to either Mr. Bassett or Dr. Enders from their own experimentation, there was a higher official in the Department of Agriculture and above the research level and above you—I am not trying to put it on you—who was familiar with all of these facts and all of this work. Isn't that true?

Dr. BYERLY. My reason for reading this reply, Judge, was that as Dr. Enders, the author, wrote in that letter, he had presented no evidence for publication on the effects of feeding stilbestrol to mink prior to 1949 and no one higher than this level knew about it.

Mr. JONAS. You are unable to answer whether there was anyone in higher authority or at a higher level to pass on that question?

Dr. BYERLY. I am unable to state.

Mr. PARKHILL. Has it not been known since 1947 that 3 milligrams of diethylstilbestrol would hamper the reproduction in mink, and wasn't that known at the higher level and research level of Dr. Enders?

Dr. BYERLY. What are you referring to, the publication referred to in the Anatomical Record?

Mr. PARKHILL. What I am referring to is what it says in the Department report on these bill that it was known since 1947. I assume that means it was known to the Department of Agriculture and I assume since all this work cleared through the chief of the Bureau of Animal Industry that it was known to the Chief of the Bureau of Animal Industry. Would you say it was not true?

Dr. BYERLY. No; I would not deny that.

Mr. PARKHILL. The fact that there was residue of this drug in a single treated head containing material that prevented reproduction in the mink, which are shown in these reports and records that I first put in the record, which dated back before 1948, isn't that true, Doctor?

Dr. BYERLY. The report which you put in evidence, again those are reports from land-grant colleges.

Mr. PARKHILL. No, they were reports of the experimental station. They were experimental station records and records of the administrator of agricultural research.

Dr. BYERLY. That may be so. The first one I am not competent to testify to.

Mr. PARKHILL. But the reports of the experimental station and experimental station records were published by the Department of Agriculture.

Dr. BYERLY. That is conceded. They are published by the Department of Agriculture but again I cannot testify on the relation between them.

Mr. PARKHILL. That is not my point. The point is Dr. Enders did not publish them. They were published by men higher in the Department, weren't they?

Dr. BYERLY. The experimental station record is an abstract journal, published for the information of the research workers. So far as I know, it attempts to cover the agricultural field and it is not limited to work done by the Department of Agriculture and the land-grant colleges. Experiment stations have a report rendered by the chief of the office. I cannot testify as to the jurisdiction of the Department of Agriculture there.

Mr. PARKHILL. When the Department of Agriculture approved the article in July 1949, recommending feeding chicken waste, wasn't it known that 4 percent or at least a substantial proportion, if not the exact percentage, of the broilers of this country were then being treated with diethylstilbestrol?

Dr. BYERLY. That was in July what?

Mr. PARKHILL. July 1949.

Dr. BYERLY. According to my recollection the answer to that question is no.

Mr. PARKHILL. Do you mean it was not known to the Department of Agriculture that there was this widespread practice among poultry raisers in 1949?

Dr. BYERLY. I know of no estimate of percentage or any survey of information that would have given you an estimate of that large number at that time; no, sir.

Mr. PARKHILL. Well, not limiting ourselves to the percentage, Dr. Byerly; it was known to you and it was known to other men in 1949 in the Department of Agriculture that there were a considerable, a substantial number of broilers in this country being treated with diethylstilbestrol, were there not?

Dr. BYERLY. If you will change the percentage to numbers, I will concede it.

Mr. JONAS. May we adjourn now until 2 o'clock?

(Thereupon a recess was taken until 2 o'clock.)

AFTER RECESS

Mr. JONAS. Are you ready to go ahead, Mr. Parkhill?

Mr. PARKHILL. Yes, Mr. Chairman.

Dr. Byerly, it is a fact, as admitted in the report, that approximately 4 percent of the broilers in this country were being treated with diethylstilbestrol in 1949? Is that right?

Dr. BYERLY. Is that what the report says? Whatever the report says, I will stick by.

Mr. PARKHILL. And in 1949 it is estimate that about 4 percent of the commercial broilers were changed to caponettes, that is, treated with diethylstilbestrol.

Dr. BYERLY. That is right.

Mr. PARKHILL. You were telling us about your qualifications this morning. Am I correct in my understanding that your specialty has been poultry husbandry? To what extent have you specialized in the matter of poultry?

Dr. BYERLY. I worked as a research worker in physiology of reproduction and development in poultry from 1929 to 1937 and as officer in charge of all livestock production since 1947.

Mr. PARKHILL. Yes. Not meaning the slightest reflection on your qualifications, down through the years you have particularly specialized in the poultry husbandry field?

Dr. BYERLY. That is correct.

Mr. PARKHILL. And now are you not also the Department's representative in the Poultry Institute—what is it called—the Poultry Institute of America? Is that it?

Dr. BYERLY. I am a member of the operating research committee of the Institute of American Poultry Industries.

Mr. PARKHILL. And you have been affiliated with that organization for some years?

Dr. BYERLY. I have been a member of that committee since about 1941 or 1942.

Mr. PARKHILL. Is it fair to characterize that as an outstanding organization among the poultry growers of the country?

Dr. BYERLY. No, sir.

Mr. PARKHILL. What is its position in that respect?

Dr. BYERLY. That institute is a group of poultry and egg processors and distributors. The operating research committee was set up to advise with respect to research on operating problems. The largest growers' organization in the poultry industry is the International Baby Chick Association. The others are the Northeast Poultry Producers Council, the National Poultry Federation, but primarily the Institute of American Poultry Industries is not a producer organization but a processor and distributor organization.

Mr. PARKHILL. Have you had any other connection with these other organizations that you mention?

Dr. BYERLY. I have been actively acquainted and have appeared at their meetings and conferences from time to time over a period of the last 20 years.

Mr. PARKHILL. Through these various associations with the poultry interests in this country haven't you been familiar with the facts, or were you not familiar with the fact in 1948 and 1949 that this practice of treating poultry with diethylstilbestrol was becoming general; that is to say throughout a good part of the eastern United States and the central United States?

Dr. BYERLY. I think I have answered that question in part. I will repeat. As nearly as I can check my recollection I knew, of course, that caponettes were produced locally and in isolated groups from the time that the practice was permitted. With respect to the volume I had neither knowledge nor occasion to know how much that volume was and my opinion was that it was small. Now, what is small?

When I say "small," it is not general. I knew, for example, that the process took hold rather more rapidly in southern California. In May of 1949, in talking with growers and producers there, I was acquainted with the fact they had found a rather heavy specialty outlet. I knew, too, there were those outlets to a market.

I was not aware that the total volume was over 4 percent as estimated until the fall of 1949, when I had occasion to determine what the estimate was.

Mr. PARKHILL. Now, while it occurs to me, have you by any chance had occasion to find out when Pure Food and Drugs became a part of the Federal agency?

Dr. BYERLY. Yes; Pure Food and Drugs was moved to the Federal Security Agency February 1940.

Mr. PARKHILL. You produced a letter here, very kindly, pointing to evidence. I believe it was under date of October 1949, referring to some previous correspondence and my understanding is up to the present time that correspondence has not arrived.

Dr. BYERLY. That is correct. We sent that telegram Friday evening. The letters have not arrived this morning so a telephone call was made to Mr. Bassett and he assured us the letters were placed

in the mail Saturday evening. We will submit them when they are received.

Mr. PARKHILL. You have, however, produced a letter from Mr. Kjaer, which we referred to the other day.

Dr. BYERLY. That is correct.

Mr. PARKHILL. May I put this in the record as exhibit No. 50?

Mr. JONAS. You may do so.

Mr. PARKHILL. Thank you.

(The letter of January 5, 1949, from Mr. Kjaer to Mr. Bassett was marked "Exhibit No. 50" and received in evidence and made a part of this record.)

Mr. PARKHILL. The letter reads as follows:

CROFT LANE, SMITHTOWN, N. Y., *January 5, 1949.*

(Attention of Mr. C. F. Bassett and Mr. F. Wilke regarding poultry waste.)

DEAR SIRS: I have been feeding chicken heads to my mink for some time and since reading your article in American Fur Breeder, November 1948, I have decided to use the entrails as well.

Since I cannot be sure of the refrigeration of the dressing plants, I have decided to cook the entire waste. To what temperature must it be cooked and for how long? Is there anything in the waste to be removed first, such as the gall?

I would appreciate all the information you can give me.

Do you have any bulletins on diseases or genetics of mink breeding?

Very truly yours,

FREDERICK KJAER.

From this last exhibit to which I referred a moment ago it appears, does it not, that the question of whether or not diethylstilbestrol caused the 1949 breeding failure was called specifically to the Department's attention sometime before October 19, 1949. Is that not true? Is not that your understanding?

Dr. BYERLY. I do not wish to evade your question. It is apparent, as will probably be shown by the letters, it was called to the attention of Mr. Bassett, an employee of the Department of Agriculture, at some earlier date in that first part of the letter.

Mr. PARKHILL. When that was done, Dr. Byerly, was there no reason for definite suspicion that the way of feeding mink was what caused the trouble?

Dr. BYERLY. There was suspicion and following that Dr. Enders proposed that a search be undertaken to determine that point and that during the pelting season of 1949, he undertake the examination of the ovaries and other material from mink-fed caponette waste during the 1949 season.

Mr. PARKHILL. Do you think the mink ranchers should have been warned of this drug as to which there were grounds to think it might affect the mind, that is, the caponette waste or only after those effects had been definitely established by experimentation?

Dr. BYERLY. I think that in order to issue a warning, there should be a high degree of presumption, a high probability that this was the source of the damage in other than an isolated case. In other words, more than one case, if you please. I think the presumption would have to be greater in order to warrant the issuance of a warning.

Mr. PARKHILL. There was more than one case which came to the Department's attention in the middle part of 1949, was there not?

Dr. BYERLY. To the best of my knowledge, until the fall of 1949 and until Dr. Enders had a chance to examine the ovaries, there was only a suspicion and not even presumptive evidence as a fact as to the cause.

Mr. PARKHILL. And you do not believe that was a sufficient warrant for the issuance of a warning, but only after further experimentation had made the danger more certain?

Dr. BYERLY. I believe that our course of action, our procedure was not dilatory but was indeed diligent.

Mr. PARKHILL. I am not asking you to characterize or defend your Department. I am asking you whether or not you feel that when that suspicion, as you have termed it, arose, you feel there should have been a warning at that time of the possibility of danger, or do you say only if it had been established by further investigation and research that a warning should have been issued?

Dr. BYERLY. This, of course, is a matter of opinion. It is my opinion until sufficient research evidence was available to establish a high presumption that this was the cause of damage, that no warning should be issued.

Mr. PARKHILL. But you agree, however, I gather, that the losses sustained by mink ranchers in 1949, did indicate a need for further research and more experimentation with effect of caponette waste in mink breeding.

Dr. BYERLY. Yes, sir.

Mr. PARKHILL. Were any experiments in regard to feeding caponette waste made by the Department of Agriculture in the 1950 breeding season?

Dr. BYERLY. No, sir; funds were not available for that purpose, which could be devoted to that purpose at that time.

Now this again, if I may explain, the program for 1949 was laid out well in advance of the breeding season. The program for 1950 was also evaluated.

There is in the record a summary of the conferences and finally the opinion especially based upon the opinion of Mr. Bassett, that the agreed program for 1950 should be carried through rather than to junk it and substitute for it one on caponette waste.

That, of course, is a matter of opinion and that was the opinion given at that time.

Mr. PARKHILL. Dr. Byerly, in the middle part of December—I cannot stop to check the date, but you know what I am referring to, Dr. Enders forwarded this article for publication which was forbidden. It came into your office officially from Dr. Enders. Am I correct about that?

Dr. BYERLY. Yes, sir.

Mr. PARKHILL. And is it not a fact that you or your office forwarded that article to your superiors marked "Rush"?

Dr. BYERLY. I assume a rush tag was put on it. I think the answer is, "Yes, sir."

Mr. PARKHILL. As a matter of fact, don't you remember telling me that out in Beltsville last fall?

Dr. BYERLY. I don't; but if you do say it, I concede it.

Mr. PARKHILL. In that article which you so forwarded, Dr. Enders did refer, did he not, to the possibility of danger from feeding caponette waste?

Dr. BYERLY. The article, I believe, has been entered in the record.

Mr. PARKHILL. I think that is a fair answer, too. I should not have troubled to ask you the question.

In the report filed by the Department of Agriculture on these bills, in the summary, if I may take the liberty of quoting, they do state in the last paragraph there:

> * * * In publicizing the results of research, it would be impossible to envision all production and marketing changes which will be made in the future, as in the case of the development of markets for broilers treated with diethylstilbestrol, that modified the value of our research data. The Department has not at any time recommended the feeding of caponette waste to mink during the breeding season. In fact, specific warning was given in 1950 against such practice.

As a matter of fact, Dr. Byerly, when in 1948 to 1949 the Department publicized the result of those feeding experiments in regard to feeding chicken waste to mink, that was not of a future development but a present and existing development, was it not?

Dr. BYERLY. The difference is a matter of degree. There were at that time considerable numbers, but not a considerable proportion, of caponettes produced. It certainly was future, so far as a rapidly growing practice was concerned.

Mr. PARKHILL. It was certainly going to grow more in the future than at that date?

Dr. BYERLY. Apparently it is still growing rapidly.

Mr. PARKHILL. Correct.

Dr. Byerly, has it not been reported in these experiments with caponettes, as claimed by the manufacturers, that the use of this pellet resulted in a heavier bird on the same amount of feed?

Dr. BYERLY. I believe that such claims have been made. The results are varied; sometimes added weight has been had. Usually, added fattening has been had. Sometimes, and I suspect too frequently, no beneficial results have been obtained.

Mr. PARKHILL. At least in the case of birds that had been implanted at about 5 weeks of age, however, the beneficial effects have been followed, have they not, generally, not always, however, with older birds?

Dr. BYERLY. And not always with 5-week-old ones, generally.

Mr. PARKHILL. And is it not a fact with which you are familiar that farmers have found it profitable to implant poultry with this drug without regard to this nickel a pound extra on the market to which you refer?

Dr. BYERLY. That, I cannot concede.

Mr. PARKHILL. Have you any idea? Maybe I should have—have you any idea of what the hourly wage of the type of farm labor that would be used to make implanted birds with these pellets is, just roughly speaking?

Dr. BYERLY. It would depend on the area of the country. A rough guess would be a going wage of 75 cents an hour. It is a pure guess.

Mr. PARKHILL. Is it fair to say it would not be over $1.50 an hour?

Dr. BYERLY. I do.

Mr. PARKHILL. And it takes two men in the operation?

Dr. BYERLY. At least two, depending on the number of birds to be handled.

Mr. PARKHILL. I believe you made some reference Friday to an article by S. Bird, L. I. Pugsley, and a third, whose name I don't recall.

Dr. BYERLY. Klotz is the third.

Mr. PARKHILL. That is the initial test, so far as it is reported in the literature on the quantitative recovery of synthetic estrogen in birds treated with diethylstilbestrol, wasn't it?

Dr. BYERLY. I would have to check the record that you cited. Isn't there an earlier one on diethylstilbestrol?

Mr. PARKHILL. I do not know. At any rate there is one of the earlier ones.

Dr. BYERLY. That was 1943. The one you cited is earlier.

Mr. PARKHILL. You are speaking there of the residuum in the neck which Dr. Lorenz reported. I am speaking of the residuum in the flesh of the fowl. Wasn't Bird the one who made the first investigation of that subject in 1947?

Dr. BYERLY. October 1947. I would assume, and as I said before, Judge, I cannot presume to speak for Food and Drugs. This is a pure assumption. I do not assume Food and Drugs issued anything; they may have had information which might have been earlier than 1947 because permission was granted in 1947. This is the earliest one with which I am familiar.

Mr. PARKHILL. And I might add it is the earliest with which I am familiar and in those tests they found that the adipose abdominal tissues with which they were testing produced evidences of estrogenic activity or characteristics though less than some of the other drugs that they experimented with. Is that true?

Dr. BYERLY. As far as I can determine, they were not able to assay, and did not assay diethylstilbestrol. They included a 10-milligram dose subcutaneously in oil, diethylstilbestrol, but the amounts, I believe, were too small for the assay test.

Mr. PARKHILL. They were not able to measure it, in other words?

Dr. BYERLY. That is correct.

Mr. PARKHILL. But they did find in using it on rats that there resulted evidence of estrogenlike activity, however, isn't that true?

Take a look at page 285, table 3.

Dr. BYERLY. May I read, it, Judge, since I must read it to myself?

Mr. JONAS. Yes.

Mr. PARKHILL. Now, thereafter, a man by the name of Gowe did some experimentation in which he discovered, did he not, that the adipose abdominal tissues found did not give results typical of other parts of the fowl, as well as other parts of the fowl.

Dr. BYERLY. Do you have that reference?

Mr. PARKHILL. It is Poultry Science of 1949, volume 28, page 666, with the pertinent part to which I refer, page 668.

Dr. BYERLY. The article, in the part to which you particularly refer is as follows [reading]:

RESIDUAL ESTROGENS IN THE TISSUES OF FOWL TREATED WITH DIENESTROL DIACETATE

(By R. S. Gowe, department of poultry husbandry, Cornell University, Ithaca, N. Y.)

This is an excerpt from an article by Dr. Gowe, appearing in Poultry Science, September 1949, volume XXVIII, No. 5, Official Journal of Poultry Science Association.

At page 668 Dr. Gowe says:

That this same situation may exist with regard to another commonly used hormone is indicated by the following experiment. A 31-pound turkey tom which had been treated by implanting four pellets containing a total of 48 milligrams of diethylstilbestrol was assayed for residual hormone in the skin, muscle, liver, and abdominal adipose tissues. Rats injected with 1 milliliter of the abdominal fat (extracted by the method of Bird et al., 1947) gave no sign of estrogenic stimulation, while 1-milliliter doses of lipid from the liver (extracted by the method outlined earlier) brought every rat into full heat. Following injections of skin and muscle extracts, 7 of the 16 rats came into full heat, while the remaining rats showed definite signs of estrogenic stimulation. It would seem that diethylstilbestrol may also be distributed in the tissues much like dienestrol, although this cannot be regarded as conclusive evidence.

It would be of great interest to know just what effects the eating of flesh from fowls fed dienestrol diacetate might have on human beings. The work of Bird et al. (1947) and Bird (1948) would indicate that there is little likelihood of any person's receiving a "clinical dose" of estrogen even with excessive consumption of oil from fowls treated with dienestrol diacetate. However, as has been pointed out earlier, the estrogen content of the abdominal fat is lower than that of the fat from other parts of the carcass. Despite this difference, a person would have to consume at least 12 to 120 pounds of chicken skin and flesh every other day to obtain a clinical dose of estrogen of the magnitude that is used in practice (1 to 10 milligrams, Seyle, 1947, and Robson, 1947). It should be pointed out, however, that there is practically no information on the possible deleterious effects that may result from the continuous ingestion of small quantities of estrogen over long periods of time. * * *

Mr. PARKHILL. You have referred, during your testimony, Doctor, to the application of drugs by doctors in much larger doses than the tests involved in eating the flesh of the fowl. Of course you are referring, are you not, to pathological treatments, or treatment of symptoms of menopause or therapeutic use?

Dr. BYERLY. That is correct.

There are reports of various doses, one of which I read into the record this morning, not with reference to the validity or propriety of it, but what one man had said he had found.

Mr. PARKHILL. You also referred this morning that there is estrogen in poultry waste in the spring.

Dr. BYERLY. I referred to a report by Julen and Gustavson in 1930.

Mr. PARKHILL. You are referring to the natural estrogen and not to the drug diethylstilbestrol?

Dr. BYERLY. That is right; and may I point out that there is estrogenic activity which we measure in most cases in reports on chicken waste. It is something which gave estrogenic activity.

Mr. PARKHILL. However, the evidence here as to estrogen or estrodiol has no such effect on the follicles as that claimed for diethylstilbestrol, namely, the retention of the ovum and the prevention of ovulation.

Dr. BYERLY. I refused to concede that Friday, and I still refuse.

Mr. PARKHILL. I say it does not have its effect which some claim for diethylstilbestrol. I am not asking you to admit diethylstilbestrol has that effect.

Dr. BYERLY. I cannot even concede an adequate dose of estrodiol or estrone might not have exactly that effect.

Mr. JONAS. Your point is that estrodiol or estrone might have the same effect?

Dr. BYERLY. Exactly. I read a substantiation of my position this morning.

Mr. JONAS. To the same degree.

Dr. BYERLY. I read in regard to the dosage, 1 milligram of one is not equivalent to 1 milligram of the other. It depends on the animal and many other factors. I read in substantiation of my position a quotation from Emmens and Parkes. They claim that a qualitative difference in the natural occurring estrone and the artificial estrogen, such as diethylstilbestrol, has not been substantiated. That was the basis of my refusing to concede. There are no qualitative differences. We concede quantitative differences. There is no reason to suppose that either in adequate doses will not interfere.

Mr. JONAS. The amount of estrogenic substances in poultry waste in the spring would not interfere.

Dr. BYERLY. Let me say there is no evidence that we will want to bank on. I made the reservation based on these reports.

Mr. JONAS. Is there any evidence, Dr. Byerly? You say it is possible. Is there any evidence of reports of natural hormone estrodiol and estrone interfering with ovulation?

Dr. BYERLY. I think I can answer that question simply, "Yes." If you ask me to document it, I would have to dig into it.

Mr. PARKHILL. In other words, so that there may be no question about it, you disagree with the statement by Dr. Guess, which I read the other day, that unlike the natural hormone the tendency of diethylstilbestrol is to depress the ovary, either directly or through the anterior pituitary and thus to inhibit ovulation, without which, of course, pregnancy cannot occur. You don't agree with that statement?

Dr. BYERLY. No, sir; in the interest of clarity I would say any or all estrogens in adequate doses would interfere with ovulation to a greater or less extent.

Mr. PARKHILL. You would disagree with the statement of Dr. Enders in the release of the Department of Agriculture of August 4, 1950, entitled "Mink Production in Relation to Stilbestrol," but diethylstilbestrol does not act like the natural estrogen of the mink, for while it induces breeding behavior it does not bring about vulvar swelling. Diethylstilbestrol, moreover, interferes with the follicles in which the eggs are growing so in spite of breeding few, if any, kits will be born.

You disagree with that statement too?

Dr. BYERLY. You have me entrapped.

Mr. PARKHILL. It was not my intention.

Dr. BYERLY. This is Dr. Enders' opinion. It is an expert opinion. He found lack of vulvar swelling and reported his opinion based on that evidence. I cannot concede that this is a distinction between diethylstilbestrol and other estrogens from a qualitative standpoint; no.

Mr. PARKHILL. I understood you to say this morning, and I might say I am putting this question in the interest of clarifying your testimony whether estrogens effect cancer, and I believe you cited instances in regard to cancer of the prostate.

Dr. BYERLY. I believe that is correct.

Mr. PARKHILL. And the prostate is a male organ, is it not?

Dr. BYERLY. Yes.

Mr. PARKHILL. Do you recall the evidence which I read into the record the other day that had to do with cancer of the breast? Would you make the same statement in regard to cancer of the breast?

Dr. BYERLY. I would have to say this, that there are many instances in the literature in which it has been concluded that estrogens are carcinogeous and you can find in Burrows many statements of that.

I believe the opinion is veering to this extent that the consensus would be that estrogens are only conducive to mammae development and in developing mammae you are more likely to get cancer of the breast than in the absence of developing mammae. It is only my opinion as an animal physiologist. I cannot claim competence as a human physiologist.

Mr. PARKHILL. As a layman, does it not follow from that that whatever reason the admission of the diethylstilbestrol to a woman having a tendency or a predisposition to cancer of the breast it would be highly undesirable, for whatever reason?

Dr. BYERLY. I shall have to deny competence. I believe the use is increasing rather than decreasing.

May I make a statement off the record?

(Discussion off the record.)

Mr. PARKHILL. Disregarding this nickel a pound advantage on the New York market, what does chicken sell for a pound?

Dr. BYERLY. It has been up a little lately. I think the going price is 33 to 34 cents a pound wholesale for commercial-product chickens. That is volume. New York is higher.

Mr. PARKHILL. I just want an approximate figure. That is plenty good enough.

Doctor, did I rightly understand your testimony the other day that the probability of an untoward effect from the consuming of caponette waste would be greater at about or during the breeding season than in other seasons of the year? Is that a fair statement of the substance of your testimony on that point?

Dr. BYERLY. I don't recall what the testimony was that I made on that. I do not wish to deny it, if I made it. Some animals are more sensitive during the breeding season but all during their life you might get different responses and aparently you would get during an active state more effect than when in an inactive state.

Mr. PARKHILL. Is it fair to say, other things being equal, there is greater danger of an effect just before or during the breeding season than after?

Dr. BYERLY. There is greater probability in the sexually immature animal than in the sexually inactive mature animal.

Mr. PARKHILL. May I be permitted to ask one or two questions?

Mr. JONAS. Yes; go ahead.

Mr. PARKHILL. That is a question that bothered me just a little bit. For example the period from November to February 1, noted, I think, in each of these bills. I am asking for information whether it is contended that these ranchers began to feed mink poultry-waste in November and stopped at the end of February?

Dr. BYERLY. No; that is not the case. In some cases they actually started feeding caponette waste later than November, and in some instances that I know of, they fed through May. Upon investigation of the details that is actually what developed. I think you will find that made clear by the affidavits that were submitted here.

Mr. PARKHILL. Now, there is a question that perhaps has some pertinence, and that is the question of permanent damage, as to how

long these animals will be damaged in their breeding behavior. In other words, I think they stopped the 1st of March, 2 weeks before breeding began, or possibly thereabouts, and had they stopped a little sooner, would the animals have shown any better performance?

Dr. BYERLY. I believe there are estimates in the record. There are also estimates that show recovery in as early as 8 days. Sometimes recovery is very quick from doses of estrogen, and that is the reason I asked Mr. Parkhill whether it was contended they stopped on the 1st of March or not. It was called to their attention.

Mr. JONAS. The bill is drawn in general terms for recovery:

> For damages sustained to mink as the result of using certain poultry waste upon the approval and recommendation of the United States Department of Agriculture from November 1949 through February 1950.

You don't want to be confined to that.

Mr. PARKHILL. I do not want to be confined to that. And frankly, again, that is something which may be attributed to me because way back last fall when the first bill was first drawn that was the way it was phrased, and all of them have been just automatically copied from that original bill. I was under the impression what happened after the breeding season was of no importance. The fact that those time limitations were put in is that I evidently thought there was no biological importance although I discovered that the facts were different. One fed until the end of April and one to May. The dates varied, but as I actually prepared the details of the case, I found that the feeding went beyond that, and I have also got a liberal education in endocrinology, although I have been able to assimilate but a small part of it. I was under the impression the damage was done before the breeding season.

Mr. JONAS. Having in mind these particular animals were affected by this drug, assuming that for the purpose of argument, just when would be the breeding season of the animals involved in this case?

Dr. BYERLY. The mink breed for about 3 weeks and it begins about the 10th of March. It is closely adjusted to the length of the days.

Mr. JONAS. In other words, if this was in March or the early part of 1949 or 1950, it was in their breeding season?

Dr. BYERLY. No.

Mr. JONAS. When is the mink whelped? What is the period of gestation?

Dr. BYERLY. I believe the usual period of whelping is the latter part of April and the first half of May, from 42 to 70 days.

Mr. JONAS. In the summary of defense set-up in your letter of March 1, initialed by the Department of Agriculture, it bears the signature of K. T. Hutchinson. Who is he? It says he is the Assistant Secretary.

Dr. BYERLY. That is correct.

Mr. JONAS. In this letter you have a number of statements. I presume you are familiar with it. You have a number of statements which I am afraid are conclusions and about which I am concerned as to what proof you have in the record to substantiate those statements.

For instance, on page 3 of that report, you have this statement:

> Many mink farmers have successfully fed poultry waste in 1950.

Now, assuming we will eliminate the word "successfully" we will have it read:

Many mink farmers have fed poultry waste in 1950.

Well, we will assume that. What do you mean by "successfully"?

Dr. BYERLY. So they have fed poultry waste and it did not cause any trouble so it must have been successful. We do not know of all the cases. However, we have cases that we can dig out. We have some instances like William in New York State who has an average of four kits and we have ranchers in Wisconsin who have successfully used poultry waste.

Mr. JONAS. You say "has successfully fed poultry waste in 1950." Do you mean to imply poultry waste containing stilbestrol?

Dr. BYERLY. No, sir.

Mr. JONAS. In other words, it is presumably free of stilbestrol?

Dr. BYERLY. We do not know, but presumably so.

Mr. JONAS. For the purpose of this record I take it you don't contend that there is any proof in here that poultry waste is fed successfully in 1950 in which there was any stilbestrol?

Dr. BYERLY. Oh, no.

Mr. JONAS. That settles it.

Now, we will go to the next one:

Some fur farmers fed it during the breeding season with satisfactory reproduction.

Dr. BYERLY. Yes, sir.

Mr. JONAS. You mean the same inhibition would apply to that product that there is no evidence you can see that they did feed chicken waste containing stilbestrol?

Dr. BYERLY. None whatever.

Mr. JONAS. Then you have this:

Minks, more so than other animals, are subjected to varying degrees of breeding failure due to a variety of causes.

Have we the causes in the record? If they are, you have set them up as a tentative defense. What is the relevancy of this statement, if you do not connect it up with the point at issue?

Dr. BYERLY. May I ask for time to document that statement until Friday?

Mr. JONAS. Yes, you may. You can see how important that is.

Dr. BYERLY. All right; we will document that statement.

Mr. PARKHILL. May I interrupt a moment? Along the same line that you are inquiring, does your Bureau or does the Department, by that statement in its report, mean to suggest that as to any of the claimants there may have been other known causes for breeding failures which exist?

Dr. BYERLY. We have not examined the breeding records so far as I know, in any official capacity, nor any of the evidence with respect to any stated case.

Mr. PARKHILL. So what it means, the principle involved here is not charged in any instance before the committee.

Dr. BYERLY. Since this is argument after the facts, we could not concede without an opportunity to examine the evidence even a high presumption with respect to each of these cases. You have presented the evidence with respect to these cases and have raised implications in regard to the breeding.

Mr. PARKHILL. Do you know of any instance where caponette waste was fed to mink just before or during the breeding season and production was normal?

Dr. BYERLY. No, sir; I do not know that.

Mr. JONAS. You have another statement. You say:

The use of caponette heads in the ration is only one of the many factors which may result in low fertility or sterility.

I am taking into consideration your admission when we were talking about the subject in the abstract, it is not contended when you use the words "caponette heads" that they contained any of these stilbestrol pellets. Now, I take it, you and I agree this record is barren and free from other proofs as to other factors which may result in low fertility or sterility in mink.

Dr. BYERLY. I have asked for an opportunity to document that.

Mr. JONAS. Is there anything more you want to ask, Mr. Parkhill?

Mr. PARKHILL. I have one exhibit I would like to introduce that I frankly overlooked the other day.

This is a letter, Judge, from Dr. W. L. Roberts, technical director, Federal Foods, Inc., who, as you recall, we referred to a number of times, and Dr. Byerly very kindly has admitted his qualifications.

In this letter he largely refers to a Dr. Munro, who was called into consultation with him.

I want to say that I have made every effort to try to contact Dr. Munro before coming here and through a series of untoward incidents I was unable to reach him, but if I might I should wish to emphasize the fact that Dr. Roberts endorses Dr. Munro's contentions and gives them authenticity.

I would like to read this letter into the evidence.

Mr. JONAS. Has Dr. Byerly seen the letter?

Mr. PARKHILL. No; I was just going to submit it to him and ask him to look at it. I might add that this letter was written August 15, 1949, long before any bill was introduced here.

It was before they started feeding waste—chicken waste.

Dr. BYERLY. I have no objection to it being introduced. I would concede Dr. Munro is a competent geneticist, but I could not concede he was a competent physiologist.

Mr. JONAS. Very well, are you satisfied to have it offered in the record? No objection, so ordered.

Mr. PARKHILL. The letter is addressed to—

Mr. HOWARD KIRSCH,
Kirsch Fur Farm, Inc., East Meadow, Hempstead, New York, N. Y.

DEAR MR. KIRSCH: Wayne turned over your letter dated July 5 to me sometime ago. I did not answer it because I did not have the necessary information.

Last Sunday Dr. Munro from Washington State called on me and I now have what I feel is authentic information. Dr. Munro is the geneticist for one of the largest hatcheries in the West. He is an authority on mink genetics and has had wide experience with hormone work.

Dr. Munro believes definitely that the byproduct from diethylstilbestrol-treated capons would prove harmful if fed at breeding time. The tissues and especially the fat would carry the hormone. This hormone affects the pituitary and decreases the flow of gonado tropic hormone to the point where the ovaries and testes would not develop sufficiently to permit breeding. At low level they might breed and not necessarily have young. They might have young and the females fail to raise them because of lack of milk. Cooking would not destroy the oestrogen.

I hope that the above answers your question satisfactorily. I plan on discussing this problem further with Mr. Myer of the University of Wisconsin. If I learn anything different from the above, I will let you know.

Sincerely yours,

FEDERAL FOODS, INC.,
W. L. ROBERTS,
Technical Director.

Dr. BYERLY. For the record I would like to state that Dr. Munro's name is spelled M-u-n-r-o, Sterling F. Munro.

Mr. PARKHILL. That is all I have.

Mr. JONAS. Then we will go over until Friday at 10 o'clock.

Dr. BYERLY. May I tell you about that?

Mr. JONAS. Yes.

Dr. BYERLY. I went back to Agriculture and it was determined that Agriculture preferred to present Dr. Enders as its witness, I think for rather obvious reasons.

Mr. JONAS. Have you any other witnesses besides Dr. Enders, as far as you know, Mr. Parkhill?

Mr. PARKHILL. As far as I know, I have not.

Mr. JONAS. Any additional evidence you want to produce, you may. You will not be held down to any strict technicalities. This is an open hearing and we want all the facts we can get.

(Thereupon, the committee adjourned to meet on Friday, March 9, 1951, at 10 a. m.)

MINK CLAIMS

FRIDAY, MARCH 9, 1951

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE NO. 2 (ON CLAIMS) OF
THE COMMITTEE ON THE JUDICIARY,
Washington, D. C.

Subcommittee No. 2 (on Claims) of the Committee on the Judiciary met in the committee room at 10 a. m., Hon. Edgar A. Jonas, special subcommittee chairman, presiding.

Mr. JONAS. We will resume hearings on the claims of Mr. Krueger and others. Are you ready to proceed?

Dr. Byerly, you still have some testimony to present, haven't you?

Dr. BYERLY. That is correct.

STATEMENT OF DR. T. C. BYERLY, ANIMAL HUSBANDMAN, IN CHARGE OF ANIMAL HUSBANDRY DIVISION, BUREAU OF ANIMAL INDUSTRY, AGRICULTURAL RESEARCH ADMINISTRATION, UNITED STATES DEPARTMENT OF AGRICULTURE—Resumed

Dr. BYERLY. I asked for time to bring in some observations with respect to the reproduction of minks receiving poultry waste during the season of 1950.

I have a statement here by Mr. Charles E. Kellogg, of the fur farming investigations, in which he gives an illustration of chicken waste successfully used during the mink-breeding season.

He says that T. B. Gibbs, owner of Delavan Lake Mink Ranch, Delavan, Wis.—

was in my office Thursday, March 1, 1951, primarily to inquire as to the feasibility of raising nutria as a possible source of feed for his minks, due to high price and scarcity of horses. In the course of our conversation, I inquired what he was now feeding, and specifically about chicken waste. He said he had been feeding a ration containing 20 percent chicken waste during the mink breeding season and had been feeding it for several years. His production was close to four one year, about three and a half kits per female on the ranch another year. This chicken waste is obtained from one processor, Val-O-Will Farm, Lake Geneva, Wis., which has several stores in Chicago. The chicken waste is cooked and frozen in slabs.

This is a specific case which has come to our attention in the last week.

When Dr. Enders testifies, I anticipate he will recite his immediate acquaintance with other cases of successful reproduction with chicken waste during 1950.

You also stated, Mr. Jonas, that you wished evidence presented with respect to my statement when I said that there were many other causes for breeding failure in mink than estrogens or diethylstilbestrol.

I have collected, over the intervening period of time, some information on that point. To outline these causes of breeding failure very briefly, they are these: Lack of libido on the part of the male, or female, or both; lack of fertility on the part of the male or female or both; the influence of the system of mating, primarily whether the males are mated once or mated twice, and if mated more than once or twice, the relationship of subsequent matings to the first mating in time is an important point.

Then there is the lack of implantation, and the mink is an animal in which the implantation is very often delayed, resulting in intrauterine death. Then there is abortion and neonstal death.

Among environmental causes are management, nutrition, disease, and inheritance.

I shall cite a few examples of statements, and I anticipate Dr. Enders will provide further information on this point.

In the first place, I should like to read a couple of quotations from the standard work, On the Physiology of Reproduction in Mink, by Arthur Hansson, published in Stockholm in 1947. He is a recognized authority on this subject, and the treatise is accepted generally by the research workers and mink producers in the field.

On page 114, Dr. Hansson states:

> If the number of ovulated eggs is compared with the number of implanted fetuses and cubs born, it is found that of 100 eggs an average of 83.7 are implanted, and 50.2 result in cubs.

In other words, about half the eggs shed result in live births, on an average.

On page 118, he states:

> The mean litter size for the once-mated female was 4.11 and average number of cubs per female was 2.77; 32.6 percent of the once-mated females did not give birth to cubs. The females which were remated at intervals of 1 and 2 days had a mean litter size of 4.21 and 4.54, and the average number of cubs per female was 3.83 and 3.73; 9.1 and 18.0 percent of the females were barren and gave birth to no young at all.

"This study was based on 2,233," Hansson states, "pregnancies," and since he describes those nonpregnant, I do not know how he meant it, but I think he meant this as those breeding rather than those pregnant.

With respect to the breeding of females and what one may expect, I call attention to an article that appeared in the Canadian Silver Fox and Fur issue of February 1945, at a time when we can certainly understand there was no use of caponette waste. In this study a survey was made of 58 Ontario mink ranches. In summary, of 1,771 females kept, 5,291 kits were born, or about 2.9 kits per female kept.

Ten of the fifty-eight herds had an average number of kits born of two or less per female kept. It was a varying item. The top one was something over five. So that there were at least 10 cases of what might be construed as unsatisfactory reproduction among the flocks of the 58 ranchers operating normally.

There are many reports of cases of breeding failure. I call attention, for example, to our own experience at Saratoga Springs at the fur-farm experiment station during the season of 1950, in which case 14 litters were born to 111 females kept.

The opinions of experts as to what might have caused these failures are various. These suggestions among our own staff and the cooperating Cornell staff have been made:

First, that the loss might have been due to the chicken waste which was used, despite the fact that it was known that it did not contain any caponette offal;

Second, that there was a possibility that since the horse meat used in the diet had been kept under refrigeration for a considerable time, that rancidity developed in the fat, which might have destroyed a considerable amount of vitamins A and E. This was checked by an analysis of the material, which seemed to indicate adequate supplies of vitamins A and E in the feed.

An opinion is attributed to Dr. Enders, which he may verify, that there is a possibility that there was a choline deficiency in the diet.

We do not know why we had such miserable results in 1950 at Saratoga Springs.

After diligent search, it was our opinion this was not due to caponette offal, and, indeed, no caponette offal was involved.

Now, I do not know how many cases it is appropriate to cite. I think, in summary, that the examination of the kit male that is used—our recommendations are very often made to keep a reserve of old and tried males for every kit male that is to be tried, in case the kit male does not work, so that you will not be caught with a kit which will not breed with females.

I will call attention to this article, for example, taken from the American Fur Breeder for March 1948. The article is signed by one L. D. McClintock. It reads as follows:

> The writer has been raising mink for upward of 25 years; and during this long interval has never had a ranch-over average, on the basis of all females kept over, of anything worth mentioning over three kits per female. Now, the occasion for this short article is the having read with considerable interest and enlightenment the excellent articles by Messrs. Ford Wilke and Charles F. Bassett in the January issue of the American Fur Breeder, and I have particular reference in this connection to the details of table 1. My own mink-breeding experience very definitely parallels the results set forth in that table 1; and this not only for the occasional year but year after year. The whole picture, as set forth in that table 1, is absolutely typical, and in all its details.
>
> Recently I happened to meet some mink ranchers from Ontario who were in Montreal attending the fur sales. One of these good fellows, a bright-seeming lad, almost immediately started to "take me to pieces" on the score of my having once publicly expressed a doubt as to the honesty of any mink rancher who claimed to have a consistent per-female litter average of over three. Of course, I made as good a "face" at the situation as I could, but soon managed to slink off to my room, where I sulked in discomfited ignominy, whatever that amounts to. Now, whatever got me down as much as anything was the seeming fact that mink ranchers' wives hold me in particular contempt on the general score of my occasional article writing. Oh, is this ever hard to take? In this connection, I hope I may be more or less pardoned, when I explain that my main reason for playing down generalized high-average claims has a bearing on some exaggerated notion the fur trade seems to have developed in recent years, in effect, that it is child's play for a mink rancher to have an average of, at very least, 4.5 kits per female kept over; and that, in the matter of average pelt prices, "anybody who does not receive at very least an average per pelt price, including 'culls,' of $20-odd, should be ashamed of himself."
>
> Frankly, I think such silly nonsensical illusions are doing us and our industry a great deal of economic harm.
>
> After all, mink ranching must stand or fall on pelt-production economy. One thing is certain, and that is that while such factors as feeding-and-labor etc. * * *

I believe I can find the article referred to which gives the history. I don't see it now and I don't think it is material. In fact, our average over a period of year at Saratoga Springs was normal, being an average of over three kits.

I think I shall conclude and let Mr. Parkhill ask questions at this point, and, if he has none, I suggest that Dr. Enders take the stand, who can speak further to this point.

Mr. PARKHILL. At some time I would like to ask Dr. Byerly a few questions, either now or later. It does not make any difference to me.

Mr. JONAS. You can do it now.

Mr. PARKHILL. I gather from the testimony you have just given, Dr. Byerly, that if a mink rancher over a period of years had had an average of over four kits per female held over, you would consider that a good production record.

Dr. BYERLY. From the evidence I have seen in the literature, that would be a very good production record; yes, sir.

Mr. PARKHILL. And would that not negative the suggestion of breeding failure being caused by poor management on the part of the rancher?

Dr. BYERLY. Not necessarily. There are instances, of course, of disease and contamination, for example.

Mr. PARKHILL. I am referring just to the matter of mismanagement.

Dr. BYERLY. Oh, on management alone; yes.

Mr. PARKHILL. Of course, it would be possible to have some disease—I presume it could affect an entire herd; is that not true?

Dr. BYERLY. Yes.

Mr. PARKHILL. But if there was no disease, as is the case in Mr. Krueger's case, as shown by the evidence, we can eliminate that question, can we not?

Dr. BYERLY. I do not wish to hesitate too much, Mr. Parkhill, but I do recall evidence with respect to disease that was placed in the record with respect to Mr. Krueger's 1950 operations.

Mr. PARKHILL. May I recall to you the statement in his affidavit, and he is referring to the breeding stock in 1950: "None of these mink at any time give evidence of any disease."

Dr. BYERLY. This is Mr. Krueger's affidavit. It is not based on a veterinarian's examination; is that correct?

Mr. PARKHILL. It is his affidavit; that is true. What veterinarian's examination may have been made as a predicate for his opinion, I could not say, but he is an experienced mink rancher over a number of years.

Dr. BYERLY. Yes.

Mr. PARKHILL. Let us take these other causes that you have mentioned. I remember lack of libido, abortion, and a number of other factors that you mentioned. Are any of those of such a character as to result in virtually no kits or a very, very small number, say twenty-five hundredths of 1 percent per female held over in a herd that had theretofore been producing successfully, or are they matters of the individual animal?

Dr. BYERLY. They are matters of the individual animal, so far as I can remember the individual. The matter of lack of libido is apparently high. Amongst the females it is variable. The estimate I have received would run about 15 percent on the average.

Mr. PARKHILL. Therefore, you would not expect these other causes—you eliminate disease and poor management—to suddenly account for virtually a total failure on a mink ranch that had theretofore been producing successfully on the average four kits per mink held over.

Dr. BYERLY. I would not eliminate the possibility of infection unbeknownst to Mr. Krueger. I would not eliminate other possible causes in the diet fed, nor could I finally eliminate, although I don't attach much weight to it, the fact that light may have been a factor, in thinking about such things. I do not attach much weight to it, but light is an influence.

Mr. PARKHILL. Insofar as the diet is concerned, the diet having been the same that they fed in previous successful years, with the sole exception of replacing horsemeat with chicken waste to the extent of 10 percent of the diet, that would eliminate the question of diet, would it not?

Dr. BYERLY. No, sir. Ingredients vary from time to time. I am calling attention to our own miserable results at Saratoga Springs, due to the fact that at that time we were using horsemeat which had been stored for a considerable period of time, and, while it was horsemeat that had been stored, and previously the feed was satisfactory, for that reason it was put under suspicion.

Mr. PARKHILL. Now, I want to ask, if I may, one other short line of questions that I overlooked the other day.

Am I correct in my impression, Dr. Byerly, that your work has to do with research as distinguished from marketing?

Dr. BYERLY. That is correct, with this one exception, that in connection with our research, as a part of our research, we are concerned with the quality of the pelts produced, and in the factors that account for the pelt qualify. In other words, we do some research in fur fiber technology.

Mr. PARKHILL. And what about the matter of poultry? Is it within your department to consider matters of marketing in the poultry field?

Dr. BYERLY. No, sir; we do work, again, in the same sense of production technology on the quality of the producers' products associated with marketing, but not on the economics.

Mr. PARKHILL. Now there is in the Department of Agriculture a branch or division which has to do with marketing; is there not?

Dr. BYERLY. The Bureau of Agricultural Economics conducts research on the economics of the market and the Production and Marketing Administration works on various processes and channels of marketing through distributors, so that there is not only one but at least three, in that there is also the Farm Credit Administration.

Mr. PARKHILL. And among those various divisions and units there is at least one, is there not, which would be concerned with the number of caponettes that were being marketed during 1948 and 1949?

Dr. BYERLY. I know of no reports collected or published, and you will understand I am being careful. I have knowledge of no reports collected and published on the number of caponettes produced.

Mr. PARKHILL. But is there not somebody in the Department of Agriculture who concerns himself with the volume of the different types of poultry that are marketed, including these caponettes, as we have been calling them?

Dr. BYERLY. I know of no report which has caponettes listed as a separate marketing grade of poultry. The only report with which I am familiar is the trade report published in the Poultryman. I think I introduced that quotation in evidence on the New York market, reporting on that, and in the trade they have a name that they call "chemical fryers," which I assume to be caponettes.

Mr. PARKHILL. I was not asking you for a report. I was asking if there is a unit in the Department of Agriculture which is interested in and knows the number of chickens of the different kinds that are marketed.

Dr. BYERLY. Both the Bureau of Agricultural Economics and the Production and Marketing Administration are daily publishing reports on specific classes and groups, under specific authorization, and I know of no report and no authorization covering this specific type of poultry. I make that point because it is important. They have to have authorization for the data produced. Every item must be covered by an authorization. I may be wrong, Mr. Parkhill, but I do not know of one covering this particular item.

Mr. PARKHILL. But there is somebody, I gather, who is interested in the question of the marketing of poultry, and the number marketed, without regard to caponettes.

Dr. BYERLY. Yes.

Mr. PARKHILL. And you don't attempt to speak for that unit of the Department, or the Department?

Dr. BYERLY. No; I don't.

Mr. PARKHILL. And you say you do not know what they know, obviously.

Dr. BYERLY. That is correct.

Mr. PARKHILL. Now, so far as you know, did you or anyone else concerned in the research work of the Department, and particularly concerned with the matter of feeding chicken waste, at any time check with those other units of the Department of Agriculture to find out if they knew what percentage of the poultry being marketed in 1948 and 1949 were caponettes? Was any such check made by any of the men on the research staff, so far as you know?

Dr. BYERLY. To the best of my knowledge, no such check was made before the fall of 1949. It is my impression inquiries were made at the end of 1949.

Mr. PARKHILL. At the time Dr. Enders reported the so-called failures.

Dr. BYERLY. That is correct.

Mr. JONAS. Would you mind answering a question for me? And in order to clarify the reason for this question, I call attention to the affidavit of Henry J. Krueger, with which you are no doubt familiar, Doctor.

Dr. BYERLY. Yes; I heard it read.

Mr. JONAS. On page 4 of his affidavit, he alleges that—

> In the 1950 breeding season, of my 335 female minks, only 33 whelped, producing a total of 85 kits.

Now, assuming that you bear those figures in mind, and at the same time recall to your mind the figures that you read to me in answer to a question that I asked you the other day, can you tell me the percentage difference between what transpired on the Krueger ranch and what

the percentage drop-off was in comparison with this instance that you cited? Can you figure that out and give me the percentage figure?

Dr. BYERLY. The difference between 85, from 335, which is 0.25 kit, and that is a difference of about 90 percent under the three average.

Mr. JONAS. And in your illustration of the average production, you said it was about what?

Dr. BYERLY. About three.

Mr. JONAS. In the Krueger specific illustration, the average reproduction was what in previous years?

Dr. BYERLY. Something over four. I forget what it was in previous years.

Mr. JONAS. What was it when it dropped off?

Mr. PARKHILL. It was 25 percent kits per female, or a quarter of a kit per female.

Mr. JONAS. I do not think I have that clear in my mind. If you take the figure that you cited in your reference to reproduction in these specific areas that you pointed out and compare them to normal reproduction, if you take the number of kits ultimately reproduced, what is the percentage difference in the drop-off?

Dr. BYERLY. Well, it ranges from zero kits to something over five. The average was about three. There were 10 of the 58 got not more than 2 kits per female kept over. Over probably 15 years we had an average of three for each female. In 1949 I think that the 14 breeders amounted to something like 0.3 of a kit, or about a 90-percent drop-off.

Mr. JONAS. You got a 90-percent drop-off?

Dr. BYERLY. Yes.

Mr. JONAS. And what was the percentage range in the Krueger minks?

Dr. BYERLY. That was approximately the same.

Mr. JONAS. That is all.

Mr. PARKHILL. You don't have precise figures for that?

Dr. BYERLY. I can dig them out if you want the precise figures. I will try to do so; 14 out of 111, but the exact number of kits I will have to look up.

Mr. JONAS All right. We will now have Dr. Enders put on.

STATEMENT OF DR. ROBERT K. ENDERS, SWARTHMORE COLLEGE, IN CHARGE OF PHYSIOLOGY OF REPRODUCTION OF FUR ANIMALS

Mr. JONAS. Are you Dr. Enders?

Dr. ENDERS. Yes; I am.

Mr. JONAS. Will you state your full name for the record?

Dr. ENDERS. Robert Kendall Enders.

Mr. JONAS. I will say for the record this is not a judicial proceeding. It is a rather informal matter, and we are pretty liberal in permitting witnesses to tell the story in narrative form or any form that they propose to follow. So you can go ahead and state your qualifications, and, if Mr. Parkhill wants to help you, it is agreeable to me.

Dr. ENDERS. I have a bachelor's degree and a Ph. D. at the University of Michigan in biology. After I had been out for 3 years I received a National Research Council fellowship for the study of reproduction. There are about 10 of those given a year, and I held

mine for 2 years, at the department of embriology, Carnegie Institution, Johns Hopkins Medical School.

I have published works on reproduction in fur animals, and Harvard College published it for me.

In 1937 I was approached by the Biological Survey in the Department of Agriculture to undertake a study of the physiology of reproduction of fur-bearing animals.

I secured leave from Swarthmore College and went back to the department of embryology and carried on the work there for approximately 6 months. At the end of that time it was perfectly clear to me that the facilities I had at Swarthmore College were vastly superior to the ones that we had at Johns Hopkins, largely in the form of space and facilities for the proper care of the animals, as well as for securing food for the animals, so I moved back to Swarthmore.

I was working on mink, silver fox, and nutria rats, and during the greater part of the time I had with me a Ph. D., a Dr. Ford, now assistant dean at Yale, Dr. Bishop, now professor of physiology at Massachusetts State, and T. Pearson, with whom I published a good deal, who is now at the University of California.

During the war I was on Government business that had nothing to do with the Bureau, and when I came back we continued to work, at a greatly reduced rate, because the appropriation did not permit any great amount of work to be done.

Well, now, I have been in this, as you can see, I have been interested in the physiology of reproduction since 1924. I have been actively working with fur animals since 1937, except for that 2½ or 3 years when I was out, in the Army.

I have published, I guess, right now, somewhere between 80 and 100 scientific articles, of which at least half have to do with the physiology of reproduction.

As far as reports are concerned, I won't bother you with the things I belong to. Actually, I think it might be wise to point out that I am a consultant of the special Pacific Science Board of the National Research Council; I am on the board for the Jackson Hole Research Laboratory of the New York Zoological Society; I am on the committee for the study of diethylstilbestrol that was appointed by Dr. Simms.

I am professor of zoology, head of the department of zoology, and chairman of the division of natural sciences at Swarthmore College.

Is there anything more you would like to ask? I don't want to be too wordy about this, and I would very much welcome guidance on this.

My connection with the Department of Agriculture is peculiar, to say the least. I say it is peculiar, to say the least, because they have furnished funds for research and for feeding animals at Swarthmore College, at my instigation. We have a general agreement with them. We present them with the place to work, with light, heat, et cetera, and lately I have been doing this work at various places.

We have sometimes received pay for it. We receive pay at the rate of $2.25 an hour, and it is limited to $1,600 a year, but that is just a token payment, as you can understand, because I suppose I probably put in more than half of my time on mink.

We have bought mink with funds received from the Department of Agriculture. We have bought mink with funds provided by

Swarthmore College. And we have received mink from private sources.

My relationship with the Department of Agriculture under our agreement is that they will publish nothing credited to me without our approval, and similarly I will publish nothing which has been put out on the mink or related animals without their approval.

I might say our relationships have been very, very satisfactory, in considering the fact that sometimes the viewpoint of a man doing research and the administrative requirements of a group are sometimes somewhat different.

They, of course, weigh the over-all policies in a way I do not, because I am interested primarily in mink as research material, and that is used entirely for scientific research. It is only fair to point out that I spend a great deal of time with the fur farmers, and where the fur farmers only pay my bare transportation, and I pay subsistence, or they furnish transportation and subsistence. Hence it can be said in a way I represent the fur people just as much as I do the Department of Agriculture.

Now, that may be a little odd. I think I should make another statement here to clarify this.

I do not have any material with me other than I have this one letter from the Department of Agriculture. It is what they want. It is their contention that the bill you are talking about should not be passed. I had a few words also with Dr. Byerly.

I would like to say, however, that I do not want to go on with my testimony unless both sides are willing to concede I am an expert, and also if you will concede it only after I have made a statement as an expert.

I think my expert opinion probably is based not solely upon an evaluation of my scientific knowledge of the physiology of reproduction. At times it is in terms that are not always scientific, but which are frequently merely an interpretation that is based upon science and experience.

That type of statement is sometimes hard to back up and hard to prove, but it is actually the way we raise most of our children as well as most of our farm animals, and I think I am making a very broad statement there, and I don't see why either side ought to make objection to my being an expert.

Mr. PARKHILL. I have long conceded that Dr. Enders is an expert, and I am very happy to say that in his presence.

Mr. JONAS. Dr. Enders, you impress me sufficiently to say that I know you are an expert.

Dr. BYERLY. I think the record will show my main objective. I made the statement several days ago that I knew of no man in the United States better qualified as an expert than Dr. Enders.

Mr. JONAS. We are in accord all around. Proceed, Doctor.

Dr. ENDERS. There are just two little things that came up in the talking I have done.

Mr. Kellogg suggested two things, and the first one is: Do I know of cases where poultry waste has been fed with success? I have no documentary proof of that. I have been on Gessner's farm. I know the people who work there. I know the head man. I have been there before the breeding season and after the breeding season. I cannot give you the number of his kits, but his production is good, and he has

good fur on his animals. He uses a very high percentage of chicken waste. He is a very thorough feeder, and the only time he feeds an appreciable amount of horsemeat is during the breeding season.

I have the evidence as to where he gets the heads, and he has stated to me and to my knowledge he gets the chicken heads from a commercial plant that buys only old chickens, so any probability is ruled out that he would get heads containing diethylstilbestrol.

His animals are very healthy, and, on checking the chicken heads, they examine them very closely, so that if they see anything that looks like a young head or suspicious, it is thrown out.

Mr. JONAS. In other words, if they think there is a possibility of stilbestrol in there, it is thrown out.

Dr. ENDERS. Yes; any young animal is thrown out. The firm he buys from buys only old hens and roosters. So they buy the cheap stuff altogether and if anything comes along that looks like it is diseased or it is young, these men toss this aside, and the rest goes in.

Now, I have been on his place during the whelping season and shortly after the whelping season, and envy him his production. I cannot give you the figures, but he is a very wonderful man. I have been up in that area, and there are people who breed who buy breeding stock from him and they have done very well on it, and then there are people who buy feed from him, and I might say that Gessner is now selling mixed feed based on poultry waste.

Mr. JONAS. Where is he located?

Dr. ENDERS. Mr. Gessner is located up in the Ramapo location on the New York-New Jersey line. One of the reasons I went up there was that I got a report that Mr. Gessner was having trouble, that he had 286 females and got only a single kit.

I examined the poultry waste coming to his farm and he was getting poultry that had been treated with diethylstilbestrol. I did not examine all the heads, but on the examination I did make, I found two treated heads, and so I was satisfied that his losses were due largely to that source. So I was confident, fairly confident, that he had only a slight amount, only a small amount, of diethlystilbestrol, and it had not been fed constantly, because diethylstilbestrol builds up, apparently.

Mr. JONAS. Excuse me. What did you say, Doctor, about the production of his animals, that it fell off to what extent.

Dr. ENDERS. One out of two hundred and eighty-six females.

Mr. JONAS. After they dropped off, you found the trouble was caused by his feeding chicken waste containing stilbestrol?

Dr. ENDERS. No; he had that trouble and he called for me and so I went up there. You see, I can palpate an animal, just run my fingers down the side, and tell you how many embryos she has. We have proven it, and I have been confirmed in that by doing an operation. We have proven in no case where I have said there were kits there were no kits. There are cases where I said there were no kits there were kits; but when I say there are, there are.

I palpated the sides of the animals and I was convinced what he had was a very light amount of diethylstilbestrol. That is why I was interested in checking on the poultry waste he was getting.

Now, this year I have checked Gessner food, which still has a high percentage of poultry waste in it, and it is very interesting to me. In

fact, I planned to be up there today, at my own expense, because I am so much interested in seeing how this man comes up, and I wanted to palpate the testicles of the mink that they have been using, to check on their condition. They will permit me to do a laporotomy. I can do a lot of thing like that and it will not interfere with their production. You can get production with this stuff under certain conditions.

Now, Dr. Byerly said something about complaints as to the lack of production. I have a letter here from a friend of mine, Dr. Mason, head of the anatomy department at the University of Rochester. I discussed some of this material with him. He independently had been working on mink and he has done some very interesting things.

Mink are different from other animals in many different ways, and he was convinced that the feeding of what we would call an oxidized unsaturated fatty acid; in other words, old meat will bring about a failure of reproduction, and a very drastic failure.

Now, I suspect that is true of horse meat. It is true of every other kind of fat, and you will find no natural fat without the fatty acid, and the only fat that is different in that respect is Crisco, which has been specially treated. So other fats, when they are old, will cause a lack of production, according to Dr. Mason's work, based on his experiments. Now, that is a long story, in that Dr. Mason has been working on it, to my knowledge, since 1932.

Then, there are other causes for the loss in production. There is distemper, which will cause it, and then there are cetain viruses which we do not know anything about which will cause it. Then, of course, it is a notorious fact that veterinarians are not specialists in fur-animal diseases and the mink operators are much more dependent on their own observations and the experiences of other experienced people.

I can cite many cases in which they had great difficulty in diagnosing a simple disease like distemper.

I am forced to say I do not believe that any man over a period of years who counts his kits and his animals carried over will ever average more than four kits per female carried over. That is based on the examination of the breeding record of many, many ranchers, extending over at least 20 years. And, as you know, the kits that count are not those that you whelp, for, after all, the payoff comes from the pelt.

There is a high mortality from various causes, and if you count them as animals that you can pelt or sell for breeders, why, I seriously doubt if there is any man in the United States who can prove a production of better than four kits.

I say that unqualifiedly, after having examined many, many records.

For instance, L. D. Trabert's records go back a long time, and they are simply splendid records, and absolutely dependable. I think if you calculated them as he calculated production, that is, the pelts, you would find that he averaged no more than four kits, and he is a very skilled husbandman.

Again, a lot of this trouble is, how are you going to calculate it? Some people count them when they are born. Will you work with that? Some count them at 8 weeks. Some count them when they separate them. Some count them when they put them in pelt cages.

And some count them when they are on the pelting board. Some count them based on the total number of females, and some count them on the number of females bred. Some also count them on the number whelped. And unless you know which figures they are actually, the number of kits does not mean much in the form of kits as to the number of kits actually bred. What actually counts is when they are on the pelting board.

That is about all I have to say here, except that I would like to show you something. This vial [indicating] is a vial I got when I started my interest in diethylstilbestrol November 7, 1946. I have done all my experimentation and I have furnished material for not less than 20 other experiments, all out of this vial, and there is almost a third of it left. So I would like to show you that it is a rather potent drug.

I would also like to say that quite apart from the Department of Agriculture I will have a forthcoming publication in collaboration with Dr. Littrell on the results of the use of diethylstilbestrol and estrogens on guinea pigs. We have been doing a series of experiments. I would just like to give you an indication of the amount of diethylstilbestrol that it takes. If you take an animal cold, that is, a test animal that has never had any of the stuff, you have to give it about 150 units. Now, the unit I am talking about is one thirty-second of a millionth of an ounce. I am talking in terms of gamma, if you want to call it that, or a microgram. If the dose is given subcutaneously, it is much more effective, and the minimum of 10 gamma will bring about a full physiological reaction in the vulva and vagina. By the mouth, it takes 50 gamma.

And I show the vial to you to prove to you that the material is extremly potent. That is all I have had since I started these experiments.

That is all I have to say, unless there are some questions you wish to ask me.

Mr. Parkhill came to see me at Swarthmore, and I think I answered all his questions as readily as I could, and I would be very glad to do so here.

Mr. JONAS. Do you wish to ask any questions at this time, Mr. Parkhill?

Mr. PARKHILL. I will defer to Dr. Byerly, and he may ask questions first.

Mr. JONAS. Do you have any questions before Mr. Parkhill questions Dr. Enders?

Dr. BYERLY. I will reserve my questions.

Mr. JONAS. Is that agreeable to you?

Mr. PARKHILL. Anything is agreeable to me.

Mr. JONAS. All right. Proceed.

Mr. PARKHILL. You mentioned the committee for the study of diethylstilbestrol.

Dr. ENDERS. Yes; I was appointed by Dr. Simms.

Mr. PARKHILL. When was that committee appointed?

Dr. ENDERS. The decision was made at a Federal hearing in Chicago on July 10, I believe.

Mr. PARKHILL. What year?

Dr. ENDER. 1950. And I would have to look it up to be sure of the precise date.

Mr. PARKHILL. That is near enough.

Dr. ENDERS. I don't have it in any chronology as to when I was appointed to the committee.

Mr. PARKHILL. That is approximately when the committee was appointed?

Dr. ENDERS. Yes, sir.

Mr. PARKHILL. Now, you referred to Mr. Gessner feeding poultry waste successfully. Does he include some chicken waste in the diet throughout the year?

Dr. ENDERS. Yes, sir; a very high percentage.

Mr. PARKHILL. And your experience in that case is that chicken waste, in the absence of this drug, does give satisfactory mink production.

Dr. ENDERS. He has certainly found it satisfactory, and his neighbors have certainly O. K.'d it by buying the food product from him.

Mr. PARKHILL. On the other hand, in the case of Gessner in which there was actually a light dose of diethylstilbestrol in the food, that did interfere with reproduction?

Dr. ENDERS. Yes, sir; it was my opinion that diethylstilbestrol did it, because I saw the stuff there.

Mr. JONAS. What was that question and answer?

(The question and answer were read as above recorded.)

Dr. ENDERS. That, I suppose, is not scientific, but this is why I say one's experience coupled with the circumstances has to be taken into consideration.

Mr. JONAS. That is an honest conclusion that you came to.

Dr. ENDERS. Yes, sir; that is my honest conclusion.

Mr. PARKHILL. You spoke, in the Gessner case, of the young being resorbed.

Dr. ENDERS. Yes, sir.

Mr. PARKHILL. Is that indicative of a light dose?

Dr. ENDERS. My thinking is this: That if they had had a heavy dose, the males would not have bred; if they had had a lesser dose, the females would not have conceived, because of the interference in the ovaries. They produced from animals that were taken off the ranch before the breeding season; they produced——

So, to me, it just seemed clear that the suspicion very definitely pointed toward the fact that there was something there causing the trouble, and, as I say, I found two chicken heads in which there was diethylstilbestrol. Now, the way this drug works, if you have a dose today and 5 days from now another dose, it would only have to be one-fifth of the original dose at the later date to bring it up to the same effect.

Now, you can argue that the human female is given as much as 100 milligrams in case of a threatened abortion. Well, what does it mean? There is apparently no scientific control of it. I went to the hospital where much of this work was done, in Boston, and I would say from an examination of their records that I believe it is absolutely and utterly irrational, the use of the material, and, of course, there is a large opinion in the medical field that would support it.

My only reason for questioning their superior method is that my experience has been that apparently a certain specified dosage, which we do not know, will cause the retention of the embryo, so that they are not born alive. That may be the action that you are after to

prevent chronic abortion in a human, but it interferes with the mink to such an extent that the young are not born alive.

There are other things which interfere with it, in addition to diethylstilbestrol interfering with it. If you give the animals unoxidized fatty acid, it will interfere with it.

I have taken both testes and ovaries from animals, and I have examined them carefully. I have sectioned them and stained them, and I have examined them under the microscope. I made a comparison with testes and ovaries that I got from the people who had trouble on Long Island, where we believed it was diethylstilbestrol, but I never saw any of the material fed. My analyses of the testes and the ovaries in those first cases where it was believed the trouble was caused by diethylstilbestrol led me again to think that the ovaries and testes from the animals received from Gessner and others had received doses of diethylstilbestrol. It is a little harder, I believe, to come to that conclusion with adults. In the adult it is a little harder to tell whether she had diethylstilbestrol in her diet, unless it was in her diet in April, May, and June. If it is there, I can tell, because she is laying down eggs for the next year. She is laying down eggs for the next year, and if she gets diethylstilbestrol she throws out the whole thing, and she will be sterile the next year.

Mr. PARKHILL. As you have stated, Doctor, a somewhat larger dose of this drug than you have indicated in Gessner's case, would prevent or interfere with ovulation; is that correct?

Dr. ENDERS. A large enough dose, enough to have prevented the male from breeding, the testes in the male would not have developed, and a dose that would do that would certainly have prevented ovulation in the female. She would have bred much rapidly than normal, but there would have been no ovulation.

That you have to take on my word, but, to my knowledge, nobody has looked at a mink ovary during this season or looked at an ovary treated with diethylstilbestrol.

Mr. PARKHILL. A small, light dose which would not interfere with the male working would not interfere with the female?

Dr. ENDERS. Yes, sir.

Mr. PARKHILL. And if you still get a lighter dose, the males will work, and there will be ovulation, but the young will not be born?

Dr. ENDERS. Yes, sir; we have a check on that. We have a check on that, because I started out with this question back in 1946, because I found that female ferrets can be induced to breed with diethylstilbestrol. So that is what started me on mink, and I reported on that and published an article on that in the year 1948, which means I did the work in 1947. I reported the fact that you can remove the ovaries from a mink and then give it diethyistilbestrol and she will try to breed.

It is a very potent thing, diethylstilbestrol, but in all of the cases where we have injected it, or fed it, the mink has not produced any kits.

Now, it may have been that bigger doses might have had varying results, but the number of animals we have had are limited. Mink are very expensive animals. And so what I did was I wrote to a number of people, suggesting experiments. I told them that it was purely experimental and that they should use only old animals that

they had given up as breeders, because, when the drug is injected, it causes hair losses. I told them it was a very, very potent drug.

Mr. PARKHILL. Were the results of those particular experiments to which you have referred published any time in printed form?

Dr. ENDERS. Yes, sir; in April 1948 I published that.

Mr. PARKHILL. Are you talking about the article on the ovaries—the mink that had the ovaries removed?

Dr. ENDERS. Yes; the mink without the ovaries.

Mr. PARKHILL. What about the reluctant mink? As I understood it, you did some work in cooperation with the ranchers with the drug used in small quantities with reluctant mink, in trying to induce breeding.

Dr. ENDERS. Yes. And the hormone always induces breeding, but they never produce; but I am forced to qualify this: Those were animals which would not breed naturally, and I would not expect production under any conditions—artificial insemination or any type of reproduction—as to those animals.

Mr. PARKHILL. With particular reference to those experiments, were the results of your experiments with reluctant males published?

Dr. ENDERS. Yes.

Mr. PARKHILL. In that same article, or last year?

Dr. ENDERS. No. I will state it is in a place where practically nobody would see it except anatomists, because, after all, I am doing this for my scientific reputation, and I publish it for scientists in a scientific journal.

Mr. PARKHILL. Could you give me a reference where it can be found?

Dr. ENDERS. It was published in the Anatomical Record and it came out in April 1948. I cannot tell you the page number.

Mr. PARKHILL. Was that article cleared?

Dr. ENDERS. That article? I am sorry. This is my fault. That article does not go into the fact of nonproduction. It is just a specific statement of the way diethylstilbestrol affects the breeding in mink. I am sorry. In that article, I did not mention the fact anywhere, because it was not pertinent to the particular thing, but it was something that I should have added to the article as published, and that is that right after the breeding season, for a reason I cannot explain, a female becomes refractive, and you cannot insist on her breeding. Why, I do not know.

Mr. PARKHILL. Was this article in 1948 that appeared in the Anatomical Record, was that one of these articles that cleared with the approval of the Department, that you referred to?

Dr. ENDERS. Yes, but, again, this was a highly technical, scientific thing.

Mr. PARKHILL. And written for scientists?

Dr. ENDERS. Absolutely.

Mr. PARKHILL. Would a scientist reading that article appreciate that point in regard to its affecting reproduction?

Dr. ENDERS. No.

Mr. PARKHILL. Now, I am talking about the effects of stilbestrol. Am I correct that it also has an effect on lactation?

Dr. ENDERS. Yes, sir.

Mr. PARKHILL. That will prevent lactation?

Dr. ENDERS. Yes, sir; it will prevent lactation, in proper dosages.

Now, that is another thing that is not being done with mink, but I have here some publications that I will show you, if anybody is interested in them—from Italy, from South Africa, and various places around the world, where they are a little bit freer with their experimentation than we are here. That indicates very definitely what it does to the mammae glands where there was evidences of carcinoma and cystic and scar tissue in mammae glands.

Mr. PARKHILL. Dr. Enders, if we were to assume a mink rancher was feeding a dosage or diet of stilbestrol so as to produce this damage that you have testified about——

Dr. ENDERS. Yes, sir.

Mr. PARKHILL. And that some time in February, say the middle of February, he stopped—the breeding season, I believe, is in the forepart of March?

Dr. ENDERS. Yes.

Mr. PARKHILL. Would the feeding of that drug for a period of say 2 or 3 or 4 months previous to the middle of February have any effect during the subsequent breeding season, in your opinion?

Dr. ENDERS. If there was a rather high level, I would say "Yes." With occasional doses, I would say "No."

Mr. PARKHILL. Would it be effective to give a warning to the rancher in February?

Dr. ENDERS. Not if he had been getting a heavy dose.

Mr. JONAS. I think I can clarify something by Dr. Enders. I think the record shows after you insert the pellet in the chicken head, it is then slaughtered 4 or 6 weeks thereafter.

Dr. ENDERS. About 6 weeks later, I believe.

Mr. JONAS. And I think the record also shows that after the chickens are slaughtered, about 25 percent of the drug still remains, unabsorbed, in the chicken head; is that right?

Dr. ENDERS. Yes, sir; it is unabsorbed.

Mr. JONAS. Assuming you have, on a mink ranch, chicken waste which contains 25 percent caponette waste, that is, the carry-over from the chicken heads, and it is processed and fed to your breeding mink, would that have any effect on reproduction, that 25 percent in the feed fed to mink? Would it have any definite effect on their breeding later on?

Dr. ENDERS. I would say if the level were as high as 150 gamma. I refer to Dr. Roberts' paper, that mentions 150 micrograms.

Mr. JONAS. Does 25 percent contain as many as 150 micrograms?

Dr. ENDERS. Yes, sir; that would be 3, and you would have to multiply it by 1,000.

Mr. JONAS. That carries with it the amount you specified and a great deal more?

Dr. ENDERS. Yes, a great deal more.

Mr. PARKHILL. Do you know of any instance where diethylstilbestrol has been fed to mink—that is to say, caponette waste has been included in the diet of mink—and the mink has produced kits normally?

Dr. ENDERS. Just one normal kit. No; that is not normal. I know of no such case. Now, remember this warning. People don't write me until they are in trouble, and so I do not know the good cases. I only know the people who are in trouble.

Mr. PARKHILL. At least, you never heard of such a case in your research?

Dr. ENDERS. No; I haven't.

Mr. PARKHILL. You spoke of this matter of not being able to reproduce better than four kits. I am not sure I understand you, but I want to make it clear in the record. You are speaking, are you not, of four kits per female, not four which are bred.

Dr. ENDERS. Yes, and the kits counted at pelting time, because that is the payoff. One of the reasons, if I may put it in here, is that I know people complain about those dwelling in ivory towers whereas they are working with men who are making a living by putting up thousands of dollars on their judgment, and it drags down your ivory tower; and the one thing I am interested in is the practical side here, and that only is the number of kits you can count at pelting time.

Mr. PARKHILL. Do you know the approximate number of mink ranches in the United States?

Dr. ENDERS. No.

Mr. PARKHILL. 7,000.

Dr. ENDERS. I have no idea. I am not interested in statistics. I know about 2,000,000 mink are produced a year. That is all—2,000,000 pelts. That is all I know.

Mr. PARKHILL. Incidentally, I was very much interested in this vial of diethylstilbestrol. Can you tell us the contents of that vial?

Dr. ENDERS. Ten grams.

Mr. PARKHILL. When full, it would hold 10 grams?

Dr. ENDERS. Yes a little bit more than 10 grams.

Mr. PARKHILL. And it has about a third left?

Dr. ENDERS. Yes, sir.

Mr. PARHILL. So, in all of your experimentation since 1946, you have used perhaps 7 grams?

Dr. ENDERS. Yes, sir. And I have in solution in the laboratory still about 1 gram.

Mr. PARKHILL. It is all out of this same vial?

Dr. ENDERS. Yes, it is all out of this same vial.

Mr. PARKHILL. You spoke of some investigations on Long Island in 1949. You referred, did you not, among others, to Mr. Kirsch and Mr. Kjaer?

Dr. ENDERS. Yes, Mr. Kirsch and Mr. Kjaer.

Mr. PARKHILL. I believe it is Frederick Kjaer and Howard Kirsch.

Dr. ENDERS. Yes, sir.

Mr. PARKHILL. And I believe that at the time that you visited with them there was also a Mr. Millar?

Dr. ENDERS. Yes, sir; it was through him that I contacted them.

Mr. PARKHILL. Dr. Enders, had you at any time previous to visiting with those men in any way warned anyone in the Department of Agriculture of the danger from diethylstilbestrol?

Dr. ENDERS. No, because what I do is that I send copies of every letter that I write to them, and nobody had made inquiry on it.

Mr. PARKHILL. Am I correct, Dr. Enders, that you had examined and dissected mink produced by Mr. Kjaer and Mr. Kirsch?

Dr. ENDERS. Yes, sir.

Mr. PARKHILL. You examined their ovaries?

Dr. ENDERS. Yes, sir.

Mr. PARKHILL. After you had done that, in December, you submitted an article to the Department of Agriculture for approval; I think the article was entitled "One Aspect of Mink Breeding Problems"?

Dr. ENDERS. May I give you the background of that, instead of answering the question? It will save time.

When I became aware of this, I went to the Utica mink show, where there were a large number of mink people, and Mr. Fresh, manager of the Eastern Fur Farmers Cooperative and a great friend of mine, was there, and, like any mink men you come in contact with, I became very friendly with him, and we got to discussing this business there, and he said to me, "Why don't you write an article for printing in the Eastern Fur Farm Cooperative Bulletin, warning the people about this, and putting in that you want mink on which to experiment? Tell them you want animals that have received this stuff and animals that have not received this stuff." He said that it would be necessary for me to get the animals in order to carry on these experiments.

So I agreed that I would write the article and he would publish it. He told me that he could get it printed within 3 days, upon receipt of the text.

Mr. JONAS. What year was this?

Dr. ENDERS. It was in 1949, in the fall. Well, mink people don't always agree. He lost his job as manager at the directors' meeting at the end of the show, and the paper I wrote was not approved by the Department. So I just wrote to Mr. Kellogg, "O. K., let us drop it; I am just not interested."

Mr. PARKHILL. Getting back to the article entitled "One Aspect of Mink Breeding Problems," which is in evidence here as exhibit No. 25, I believe I am correct, am I not, that you received the original of this, dated January 3, 1950, worded to the effect that there was objection and in the form submitted it was not approved?

Dr. ENDERS. Yes, I think that was it.

Mr. PARKHILL. As a result of that, on the 6th you sent your memorandum urging the necessity of warning the mink ranchers of this danger; is that correct?

Dr. ENDERS. Well, it was one of those days there.

Mr. PARKHILL. It was following the refusal of the Department to approve this publication?

Dr. ENDERS. Yes.

Mr. PARKHILL. That was called to their attention on January 6 by your office memorandum?

Dr. ENDERS. Yes. I said it was urgent to get this stuff out.

Mr. JONAS. January 6, 1950?

Dr. ENDERS. Yes, sir; January 6, 1950?

Mr. PARKHILL. I just wanted to get that chronology on that history.

Dr. ENDERS. Yes.

Mr. PARKHILL. Have you ever had occasion, previous to that time, to request funds for research in this field of mink genetics that you have been testifying about?

Dr. ENDERS. From whom?

Mr. PARKHILL. From the Department of Agriculture.

Dr. ENDERS. Yes, sir; they had been supporting me; they had been actually putting up funds which ranged from sometimes as low as $1,200 to as high as almost $6,000 for this.

Mr. PARKHILL. These are the funds to which you referred earlier in your testimony?

Dr. ENDERS. Yes, sir. It varies from year to year, depending on what we do with it, and what we do with it depends on how much we have.

Mr. JONAS. Who is that money given to? From what sources is it allocated?

Dr. ENDERS. The money comes to me. I don't have the symbols of the appropriation but I have a man who takes care of it and looks after all the money and I sign where he says, but I read it before I sign, but I have to sign, and the biggest amount of money goes for his salary, because he is a good mink man. He handles the money, mixes the mink feed, and cooperates with me.

Mr. JONAS. Where does the money come from?

Dr. ENDERS. From the Department of Agriculture.

Mr. JONAS. A Government appropriation.

Dr. ENDERS. I imagine it is for experimental appropriation. I might say that Swathmore College contributes more than the Government does, but, of course, we are interested in the research.

Mr. JONAS. After the money is turned over to you, are you obliged to make an accounting?

Dr. ENDERS. We spend it as though we were in the Department, with vouchers and all that stuff.

Mr. JONAS. It is all checked back?

Dr. ENDERS. Yes; and it goes through the General Accounting Office, because sometimes I have my difficulties with them.

Mr. JONAS. There are complete accounts kept of the original deposits and the disbursements?

Dr. ENDERS. Yes, sir; absolutely.

Mr. PARKHILL. There is one detail I overlooked. You talked about Dr. Mason, and you said something about fat causing loss of production. I am not sure I followed you where you referred to rancidity of fat.

Dr. ENDERS. Yes; I could call it rancidity.

Mr. PARKHILL. That is in layman's language.

Dr. ENDERS. Yes; it is possibly more accurate to say it that way.

Mr. PARKHILL. Unfortunately, it is not too clear to a layman like me.

Dr. ENDERS. I apologize for not making it clear.

Mr. PARKHILL. I believe that is all I have.

Mr. JONAS. I think somewhere in your testimony while you were being interrogated by Mr. Parkhill you referred to an article of which you were the author. What is that exhibit number?

Mr. PARKHILL. That is exhibit No. 36, which was introduced in evidence, entitled "Mink Production in Relation to Stilbestrol," put out by Dr. Enders, assisted by Mr. Merritts.

Mr. JONAS. And in another there was reference made to the experimentation carried on by Dr. Enders, where there was a sectioning of the ovaries or an examination of the ovaries of the mink.

Dr. ENDERS. Yes.

Mr. PARKHILL. And it was disclosed when these were given a microscopic examination that certain pathological conditions were discovered that were abnormal in the animal.

Dr. ENDERS. Yes.

Mr. PARKHILL. In other words, you found some infection or some abnormality in the ovaries.

Dr. ENDERS. Yes; an abnormality in the ovaries.

Mr. PARKHILL. Can you tell me whether or not the animal you examined was an animal that had been fed on or had used food that contained stilbestrol?

Dr. ENDERS. No; that is the weakest part of the whole thing. In other words, before I would testify to that I would have to see the diethylstilbestrol put in the chicken and I would have to see the chicken head ground up and I would have had to follow it to the mink. That is science. On the other hand, I have every reason to believe, under circumstantial evidence, that is what occurred.

Mr. PARKHILL. To what do you attribute the abnormal condition you found in the ovary?

Dr. ENDERS. To the diethylstilbestrol.

Mr. PARKHILL. You were not there to see it given to the mink, but, relying on your experience and education and research, you came to a definite conclusion?

Dr. ENDERS. Yes.

Mr. PARKHILL. That this particular disease in the ovaries could have been produced from only one source, and that would be diethylstilbestrol; is that correct?

Dr. ENDERS. No, I would not say that, but from the experience on a large number of farms and with a large number of ovaries, what you find in common is the history of feeding chicken heads and finding some heads with diethylstilbestrol in them. Here, again, I am not speaking as a scientist but an intelligent man who reaches a conclusion by the circumstances of the case and reaches the conclusion it was diethylstilbestrol; also the fact that that kind of thing can be produced by the injection of diethylstilbestrol into an animal.

Mr. PARKHILL. Let us take the original premise, the one you just described here. You concluded, after making your examination, that the conditions that you found there, after discarding all other hypotheses, that the soundest approach to determining what caused the disease was stilbestrol; is that correct?

Dr. ENDERS. Yes, sir.

Mr. PARKHILL. I think I have concluded, Judge.

Mr. JONAS. I want to ask one more question in following it up: You also came to the same state of facts with the same hypothesis, we will assume; you also came to a second conclusion—first, you did not actually see the drug fed to the animal; that is No. 1.

Dr. ENDERS. Yes.

Mr. JONAS. But after forming your opinion as to what caused the abnormal condition in the ovaries, you also came to a second conclusion, that you could prove the ones you came to if you took an actual live animal and fed it stilbestrol, and you would come to the same condition that you found in this animal which you determined both by hypothesis and experiment had been diseased by stilbestrol.

Dr. ENDERS. Yes, but the trouble is that so many of the times I have had to go to the ferret, which is the nearest similar animal to the mink, because of the lack of funds, and I had to use ferret material for some of the experimental work.

Dr. BYERLY. In the first place, with regard to the experience of Mr. Pessner, for my information, did he feed chicken waste?

Dr. ENDERS. Yes, and he mixes as much as 7 tons at a time, so it is an awful mess.

Dr. BYERLY. Mr. Ressner's experience to which you refer occurred in the season of 1950?

Dr. ENDERS. Yes, sir.

Dr. BYERLY. Do you have experimental evidence that diethylstilbestrol causes abortion?

Dr. ENDERS. No.

Dr. BYERLY. You said you thought it did.

Dr. ENDERS. No; that is my opinion.

Dr. BYERLY. You have no evidence?

Dr. ENDERS. No. I palpated the animals and there was resorption. Of that I am positive.

Dr. BYERLY. Do you have any experimental evidence of resorption?

Dr. ENDERS. Yes; because of the fact that when I palpated these animals they should all have produced a week or 2 weeks before.

Dr. BYERLY. Were these animals that got fed diethylstilbestrol?

Dr. ENDERS. No. These are testers. Those animals we could only assume, because I saw heads with diethylstilbestrol among the heads that he had bought from the same place from which he was getting his material regularly.

Dr. BYERLY. As a scientist, for publication in a good scientific journal, would you write a paper and present this as evidence?

Dr. ENDERS. I would certainly do it as circumstantial evidence.

Dr. BYERLY. Would you expect the editor to accept the paper?

Dr. ENDERS. It depends on the journal; it very definitely depends on the journal. For a journal to the veterinarian people and stock feeders, yes. I would not write a paper like that for the Anatomical Journal or the Journal of Zoology.

Dr. BYERLY. If you were an editor, you would not accept such a paper?

Dr. ENDERS. Not for those papers, but I would for a livestock journal.

Dr. BYERLY. Why do you differentiate?

Dr. ENDERS. Because of the fact that we have to take a great deal on hearsay, and a great deal on circumstantial evidence, or you will not get an animal produced any more. I would like to have the stock breeders know that there is no sex relation between copulation and parturition proven by experiments, although everybody and the man on the street knows it. It has been proven by nonscientists, but it has not been proven strictly by men who go through just strict sterilized science. What I am for is the usefulness of science. Here I am an academic man talking about practical things more so than a practical man talking about those things, but you can just sterilize it with science. I have no desire to wait until everything you do is absolutely proven by scientific laboratory tests.

Dr. BYERLY. I only wish to develop the facts. This is your opinion.

Dr. ENDERS. Yes.

Dr. BYERLY. It is not based on laboratory experiments.

Dr. ENDERS. I will gladly admit it is opinion.

Dr. BYERLY. What is your personal opinion, and I am referring to our own 1950 breeding failure at Saratoga Springs, N. Y. At that

time you said that you believed that the failure was due to a choline deficiency. What is your present opinion?

Dr. ENDERS. My present opinion is that there was a high percentage of old fat, either that or choline deficiency. I am not certain whether it was a choline deficiency or whether the fat was too old.

At the time I examined them I performed a laparotomy to get at the facts, and at that time I could tell very definitely there was a drastic change taking place in the physiology and, knowing they were very fat, it looked like choline deficiency. Now, I would not publish it. Since then my opinion, of course, convinced me that the fat was too old, far too old, and I would say that it was either one or the other.

Dr. BYERLY. Did these Saratoga females retain and resorb their young? And was that due to fat rancidity?

Dr. ENDERS. Yes; there is no question.

Dr. BYERLY. I am correct, am I not, that the breeding failure at Saratoga Springs was comparable to the losses you have been talking about?

Dr. ENDERS. From our viewpoint, even worse, as I get no animals to experiment on if they are not born.

Dr. BYERLY. You have stated, I believe, that diethylstilbestrol brings about receptivity but it does not bring about vulvar swelling, and I think you stated with respect to these animals that had allegedly received caponette offal that they did not breed.

Dr. ENDERS. Yes.

Dr. BYERLY. And you have stated in your opinion any considerable amount of diethylstilbestrol would interfere with the ovulation of the female. Then where does the vulvar swelling come from?

Dr. ENDERS. Do you have 10 minutes? I have looked on lots and lots of animals, and I have given seminars in many institutions on this, and nobody can check on it.

What happens to the female mink? When she comes into heat she comes into heat because of the length of the day, and I have proof of it, definite proof. I know what I am talking about.

Here you give her this synthetic hormone which induces breeding behavior but does not bring about vulvar swelling. It causes two things: One is the follicular stimulating hormone which makes the follicle around the egg increase in size. There is also an inciting hormone, in that ovulation is not spontaneous. When the follicle reaches the size under the follicle stimulating hormone with some luteumizing hormone, the follicle breaks and the egg is released. She needs stimulating copulation. It takes that definite stimulation. Again, that stimulation results and the egg drops. I intend to publish that in a scientific journal. In most other animals, where the egg has developed, the follicle breaks and the egg is shed, the resulting scars developing a corpus luteum.

When there is estrogen in the blood, in the follicle, that is the only time that the female will accept the male. So if you feed her full of artificial estrogen, she will breed, but nature does things which the synthetic does not do.

I haven't referred to diethylstilbestrol in my testimony as an estrogenic hormone, because I don't believe it is. It is a hormone which does a particular type of thing. Now, with the natural estrogen the animal will go ahead and fatten these eggs, and with estrogen

going through her blood she will breed as long as that estrogen is there. What happens is that this estrogen makes the vulva swell. In the female it swells to about 60 times its normal volume. Normal estrogen does it. If you give diethylstilbestrol, it will keep that follicle from bursting in some cases, or they will burst in a peculiar way, because that follicle is pointed. When she gets estrogen in her blood of her own making, that estrogen of her own making supports the swelling of the vulva.

What happens is this: Under the increasing length of days the corpus lutem takes over. The eggs descend and are implanted. Then she goes off, and, as I told you before, you can give her diethylstilbestrol and she will not come back in breeding, in that the corpus lutem is there, which is antagonistic to the hormone.

I don't like to call diethylstilbestrol an estrogen, because it does a specific thing in mink and does not do like a natural estrogen does.

Dr. BYERLY. Dr. Enders, you said it was the animal's own estrogen which caused vulvar swelling.

Dr. ENDERS. Yes.

Dr. BYERLY. And in an animal which had been receiving diethylstilbestrol and showed breeding behavior, there must have been ovulation and sufficient functional labor to supply considerable of its own estrogen to produce vulvar swelling; is that correct?

Dr. ENDERS. Yes; it is absolutely correct.

Dr. BYERLY. Then the administration of this alleged caponette offal did not prevent the action of the follicular stimulating hormone to bring about growth of the ovary.

Dr. ENDERS. Not in the report that was given.

Dr. BYERLY. Then if the diethylstilbestrol has been withdrawn, how long would it have taken to get it out of the system so that you would have had minks that would reproduce normally?

Dr. ENDERS. They would not do it during that breeding season, not at all.

Dr. BYERLY. Do you have evidence to that effect or is that your opinion?

Dr. ENDERS. I do not know quite what you want in evidence.

Dr. BYERLY. Have you given diethylstilbestrol to mink prior to the breeding season, then withdrawn it, and found no breeding?

Dr. ENDERS. No.

Dr. BYERLY. Then you have no evidence.

Dr. ENDERS. But I would not do it in my heart.

Dr. BYERLY. That is your opinion, likewise.

Dr. ENDERS. Yes, that is my opinion.

Dr. BYERLY. Likewise, your opinion with regard to diethylstilbestrol is an opinion.

Dr. ENDERS. No, sir.

Dr. BYERLY. I read into the record a statement by Emmons and Parks. Is that an opinion?

Dr. ENDERS. Yes. That is the statement published in the Endocrinology Magazine, 1945–46. Yes, I am quite familiar with the statement which they made.

Dr. BYERLY. It was not qualitative.

Dr. ENDERS. I don't believe them.

Dr. BYERLY. But they did make a statement.

Dr. ENDERS. Well, they are eminent scientists. I carried on work with one animal, and that statement is confined to the ferret, and, as I say, the ferret is closest to the mink of all the animals I know.

Dr. BYERLY. Again, I am not questioning your opinion. You are entitled to have an opinion.

Mr. JONAS. I am trying to determine now in my own mind this question. You talk about opinion and you also talk about experiments and you talk about facts. That is, between scientists those three elements must be taken into consideration.

Dr. ENDERS. Yes.

Mr. JONAS. How do you arrive at any definite conclusion in any research unless you largely confine the results of your experimentation to hypothetical opinions from the reactions you get? You will never get any absolute facts in your experimentation, but you will largely have to rely on the results you get.

Dr. ENDERS. Yes, but, of course, it is not an opinion, because they can be duplicated. Experiments can be duplicated, and if they can be duplicated, it is science; if they cannot be duplicated, you are wrong, and it is not science.

Dr. Byerly and I see this matter different as scientists.

Mr. JONAS. Perhaps that is a good thing. When two men disagree, we determine one is right or wrong.

Dr. ENDERS. We work together but we don't agree.

Dr. BYERLY. There is another point that Dr. Enders has brought up, and that is the necessity for publication of results. One man in one laboratory finds a result and he publishes it. You know he has conducted an adequate experiment with adequate control, and that is what he has found. Under those circumstances and in that same laboratory he will repeat the results in the laboratory. Then the results are published, so that similar scientists in other laboratories under other conditions may find the results for themselves. We don't challenge the truth of a man's statement that he found so and so, but if I, in my laboratory, cannot do it, then there may be some explanation necessary as to why the same results were not obtained. So that is a point of conflict of results before the last check is in.

I think with respect to scientific evidence and facts we will probably agree, Dr. Enders, that one is observation and the other is evidence developed as the result of adequate controls.

Mr. JONAS. I think Dr. Enders knows your viewpoint.

As I recall, you stated that in your best judgment there is no positive evidence here to establish facts, but there is a very, very pronounced presumption that this condition in the mink was brought about by feeding this drug.

Dr. BYERLY. That is correct.

Mr. JONAS. If you eliminate every other feature or factor in the picture, you have the presumption where that would lead you on to a conclusion; isn't that as far as you are ever going to get?

We have gone along, which means that if I walk down the street and out in the street there is a man lying, and he is dead—nobody saw what happened except that there is a wall and there is a boiler inside that wall, and it is known that there was an explosion. Nobody saw bricks or anything hit this man. We know that 10 or 15 feet away from him there was an explosion. Nobody saw anything hit the

man. However, there is the presumption that the fellow was killed by what happened in that building.

You put me on the right track and I think it is a good idea.

In these scientific experiments, there are so many elements that enter into it that you must stand by and watch every recommendation which took place, everything which is so minute and so detailed. Well, you cannot just do that, but you can take the general picture and with all your background you must come to some sort of a conclusion, even based on a presumption; isn't that true?

Dr. ENDERS. Yes.

Dr. BYERLY. In 1946, Dr. Enders conducted experiments with diethylstilbestrol on the assumption that by giving subcutaneous administration to females he could obtain breeding in mink.

Dr. ENDERS. Yes, sir.

Mr. BYERLY. That was his interest until 1949.

Dr. ENDERS. Yes, sir.

Dr. BYERLY. I do not know whether he has abandoned all hope. Not everyone has abandoned all hope. I am less conservative than Dr. Enders. He says 3 milligrams are adequate to destroy breeding in mink.

Dr. ENDERS. Yes.

Dr. BYERLY. Have you tried 30 milligrams? A little bit of strychnine will kill a man and a lot will not; isn't that true?

Dr. ENDERS. A small amount of strychnine also is a tonic. So, if we are going to cover what we are actually doing now, every mink that I am maintaining on a diet with variable diets of stilbestrol——

Mr. JONAS (interposing). This is true. I noticed this in a newspaper article. It appeared that in medical research they have used stilbestrol to attempt to determine what effect it might have on hepatitis.

Dr. ENDERS. Oh, yes.

Mr. JONAS. And then they used stilbestrol to determine what effect it may have on abortions in women. They have used it for a half a dozen things. They did discover in all those researches it did not do the things like it was said, like in hepatitis.

Dr. ENDERS. Or abortion. That is ruled out.

Mr. JONAS. You had a different position originally, Doctor, in that you were trying to determine whether you could increase the breeding production of animals, and you just came to the opposite conclusion.

Dr. ENDERS. I certainly did.

Mr. JONAS. In other words, the conclusion you arrived at was instead of it increasing production it retarded or prevented it.

Dr. ENDERS. Yes, sir.

Mr. JONAS. And the truth is all we are trying to get at here.

Dr. ENDERS. Yes, sir.

Dr. BYERLY. That is the opinion I expressed 100 percent.

Mr. JONAS. There is another point which is a matter of opinion. You stated that in the poultry waste 25 percent might have been caponette heads. That is a maximum estimate?

Dr. ENDERS. That is right.

Mr. JONAS. As I recall the evidence, in the Krueger case it was stated that the poultry were implanted at 5 weeks of age, and they were killed at an age of 13 weeks.

Is that your recollection, Mr. Parkhill?

Mr. PARKHILL. That is my recollection of the statement made by Mr. Marlowe.

Dr. BYERLY. So 8 weeks elapsed from the time of implantation to the time of slaughter.

Mr. PARKHILL. That is what is in Mr. Marlowe's affidavit.

Dr. BYERLY. There is a reasonable assumption as to the amount of residue left in the head at the time the chicken is slaughtered. In the opinion of poultrymen, 8 weeks is about the maximum of the time in which they can get any effect at all, and after that length of time the chickens begin to recover their looks and combs grow, and so we would suppose the residue in the heads was at a minimum, Mr. Chairman. Let us assume 10 percent.

If 25 percent of the material fed was caponette offal and two and one-half heads per pound were fed, and at 10 percent, the daily dose is in the order of 30 micrograms, at the level Mr. Krueger used. I have worked this out. It is one-fifth of the dose reported in that Roberts case, which is in the record.

Again, 30 micrograms might produce those results. We don't have the experimental data, but it is only one-fifth of the dose Dr. Enders referred to.

Mr. PARKHILL. I must challenge the statement by Dr. Byerly just now, when he said 25 percent was the maximum, or 3 milligrams. Actually, the report of the Department of Agriculture admits there may be as much as 5 milligrams left.

Dr. BYERLY. That would be 33 percent, then.

Mr. PARKHILL. That is correct; that would be one-third.

Mr. JONAS. In the discussions and testimony produced, there has been shown, and we developed this, that the basic underlying question on what we are interested about is food for mink.

Dr. ENDERS. Yes.

Mr. JONAS. You have mentioned horse meat and chicken offal. You have mentioned horse meat which is decayed and aged, and chicken offal may be subject to the same conditions. And then we have the over-all picture that there is, however, an element in this food picture, because of this particular drug injected into the head of the poultry.

We are talking about different geographical locations. You have a number of pens in Illinois and then you have some way over in New York. It is something not only that you must take judicial notice of, but notice of as a reasonably prudent person, as a person makes ordinary observations in daily life; isn't that true?

Dr. BYERLY. Yes, sir.

Mr. JONAS. Then, we must assume the same kind of food, subject to the same atmospheric conditions in either State, the same possible food, and subject to the same atmospheric conditions in both New York and Illinois. It would be too much of a stretch of the imagination to say that the relationship of this product was entirely alike in both areas.

Dr. BYERLY. That, of course, is true. I have no information and, insofar as I know, I have no means of informing myself with respect to the conditions on the ranches where the claims were made. I simply do not know what the foods were and what the conditions were. With respect to horse meat, for example, and with respect to

other foods, I believe those foods should be kept in refrigerators only a certain time. And variations occur in regard to refrigeration temperatures. And even if the foods were refrigerated, changes in the situation can take place, and they would take place at Hempstead, Long Island, as well as in Illinois.

Mr. JONAS. Yes, but if you took one particular ranch and you went into it and you studied what was being fed, and you first ruled out meat, frozen meat, and whatever you had, and you kept ruling things out until you finally got this one particular thing, you finally come out with the chicken head with the stilbestrol in it.

But where you have six operators, you cannot keep ruling out everything, but on each one you keep on ruling out different foods until you find there is one product that was common to all of the diets. So how would you meet that situation? You must use common sense and determine what people would do under like circumstances; isn't that true?

Dr. ENDERS. Why didn't these people send me ovaries? The other people did.

Mr. JONAS. Who?

Dr. ENDERS. The people who are making claims.

Mr. JONAS. Where did you get the ovaries with which you made your experiments?

Dr. ENDERS. I went up to Long Island, I went up to Gessner's place, and I went over to Vineland, N. J., and other places, and other people sent them to me, or I got them.

Mr. JONAS. These particular sections that you made from the animals, they did not come from any particular ranches——

Dr. ENDERS. They came from ranches that were having trouble.

Mr. JONAS. But not from those who filed claims?

Dr. ENDERS. No; I have seen none of this material.

Dr. BYERLY. Dr. Enders hasn't looked at the bills, but Mr. Genetti is one of the claimants.

Dr. ENDERS. I went up there one time this year at my own expense.

Mr. JONAS. Was experimentation tried on those animals?

Dr. ENDERS. No. I said that I suspected their having diethylstilbestrol in them.

Mr. JONAS. You had no animals submitted for resectioning?

Dr. ENDERS. No; I did not know Genetti was in this before. None of the Illinois people have I seen. The name Krueger I haven't seen.

Mr. JONAS. Where is Mr. Genetti's place?

Dr. ENDERS. In Pennsylvania, about 114 miles from Swarthmore. He is a good mink rancher.

Mr. JONAS. When did you make research on these animals whose ovaries you described?

Dr. ENDERS. In 1949. And, of course, I checked a lot since then.

Mr. JONAS. You prepared the article after going through this one experiment?

Dr. ENDERS. Yes.

Mr. JONAS. Did you incorporate any names?

Dr. ENDERS. I included them and gave examples, but not cases. Genetti was one. A lot of people will not buy mink from a farm which feeds chicken heads. So I tried to protect the men, so they do not know who they are, but I can identify them.

Mr. JONAS. But assuming that now you take all the elements that could enter into the question of breeding—I am putting it up to you as a scientific man—assuming you had all the elements, and then you were called upon to rule out the elements which had the lesser possibility of bringing about this condition in the mink, which ones would you rule out and which would you let remain?

Dr. ENDERS. That is very, very embarrassing. I must pass on the ability of these people as expert men.

Mr. JONAS. Assuming that that is all out, and just from a scientific standpoint. You have shown this drug and shown how very, very potent it is.

Dr. ENDERS. Yes.

Mr. JONAS. There is no doubt, from the production of the vial you have used for a great deal of time, and it shows there is a great deal left in it, which indicates how powerful it is. Then take into consideration frozen meats and fat. But if you want to help me in the situation, in determining what the facts are in the case, I would like to know, after you rule out different things, what would you retain? What would you retain as being the most presumptive evidence in bringing about the interference with the production of mink? What would you retain?

Dr. ENDERS. I think you get a common denominator for all of them, and I am forced to come to that conclusion, on the basis of experience, not as a scientist, that it would be something like stilbestrol.

Mr. JONAS. That is what I wanted to get from you.

Dr. ENDERS. But I would also like to point out that I am definitely opposed to the use of diethylstilbestrol in any form, and I would not use any poultry myself for my family that had diethylstilbestrol in it.

Mr. JONAS. That is based on what?

Dr. ENDERS. On my observation of the quality of the fat. You are getting cheated, in my humble opinion, because of the quality of the fat. And I also think it is too potent a drug.

Mr. JONAS. In other words, you are getting something different from what you expected by interfering with nature.

Dr. ENDERS. That explains some of my prejudices. You have probably noticed that I am prejudiced in favor of the mink farmer and the Department of Agriculture, both, and I am very much afraid, and I would like to say this, that if you are going to place a handicap on the Government scientist so that he can put out something in perfectly good faith and later have it come back on his neck, if you are going to do that you might as well wipe out all the scientific work of the Government. That, to me, as a scientist, is a very disastrous thing, and makes me very glad I am an individual person.

Mr. JONAS. Is there anything more you want to add?

Dr. BYERLY. There is only one thing, in regard to the time schedule. There is the release of August 4, 1950, entitled "Mink Production in Relation to Stilbestrol," which is exhibit No. 36. In that release it states:

> Experimental proof that diethylstilbestrol injected into or fed to female mink during the breeding season will bring about breeding but will interfere with the production of kits has been in existence for 4 years and some of the evidence was published in 1947.

Now, I have a memorandum from Dr. Enders under date of October 3, 1949—I mean 1950—in which he states:

In reply to your memorandum of September 25 on stilbestrol in mink production, you are quite right that the earliest published information on the feeding of stilbestrol to mink was in 1949. * * *

That was in 1949, it was not clear in the record.

Going on further, Dr. Enders says:

In a recently published article on the subject, I did not differentiate between the work on feeding and injection: First, because in a popular article it would have required too much hedging, and, secondly, because it has been proved that the results in injection and feeding of diethylstilbestrol are the same, although the dosages may be different. * * *

Dr. ENDERS. Yes; that was in 1949. I would reply that as to such a generalized thing, I am very definitely of the opinion that 3 milligrams injected is more than enough to prevent breeding, and I would defend my reputation as a scientist regarding this, that this differentiation means nothing to the man who is feeding chicken waste to mink.

Dr. BYERLY. I make that point for the purpose of bringing out the time sequence.

Mr. JONAS. Are all the papers in evidence?

Mr. PARKHILL. Mr. Chairman, you will recall that there was correspondence discussed which Dr. Byerly consented to furnish me for the record, and I would like, if I may, to introduce four exhibits at this time.

Mr. JONAS. There is no objection. These cover correspondence between Mr. Douglas Miller, of Huntington Station, Long Lsland, N. Y., and Mr. Charles F. Bassett, Director, United States Fur Animal Experiment Station, Saratoga Springs, N. Y.

These may be marked "Exhibits 52, 53, 54, and 55."

(The letters above referred to were thereupon marked, respectively, "Exhibits Nos. 52, 53, 54, and 55," were received in evidence, and were made a part of the record.)

Mr. PARKHILL. Rather than take the time to read them all in the record, some parts of which are not pertinent, I would merely like to identify and read small portions thereof.

The first is a letter dated April 23, 1949, from Dr. Douglas Millar, Yankee Breeding Farm, Huntington, N. Y., to Mr. Charles F. Bassett, Director, United States Fur Animal Experiment Station, Saratoga Springs, N. Y., in regard to the feeding of chicken waste.

The second is a letter dated April 28, 1949, from Mr. Bassett to Mr. Millar, in answer to the previous exhibit, in which Mr. Bassett gives Mr. Millar some information in regard to the feeding of poultry waste and calls attention to breeding failures in 1949.

Let me correct one statement. Mr. Bassett says:

* * * Since last year I have had reports of exceedingly poor production from three individuals who used poultry waste as the sole meat source in the diet fed their mink. * * *

I interpret that to be, since he says "last year," that he is referring to 1948.

The third exhibit is a letter dated September 20, 1949, from Mr. Millar to Mr. Bassett, in which he refers to the letter of April 28, but also I would read only a part, which has this to say:

The chicken waste that I was going to get is now coming through with diethylstilbestrol. This would require making two mixes daily, one for the pelter, with the chicken waste containing the caponizing agent, and the other from our regular ingredients. Several very good buys have made it easy to decide what to do for the balance of this year.

I believe that the unfortunate experience that you report about the ranchers that used poultry waste was due to it containing this caponizing agent, or else they may have had simonella poisoning during the gestation period.

The fourth exhibit is Mr. Bassett's answer of September 23, 1949, to Mr. Millar, in which he has this to say, among other things:

The suggested effect of diethylstilbestrol upon possible production in mink was something that has never occurred to me. I am going to write a letter to Dr. Robert K. Enders, of Swarthmore College, who has cooperated with us on many of our reproduction experiments, to find out if he knows anything about the possible effect of that product upon reproduction in mink. At any rate, you would not want to use poultry waste with this product in it until it was definitely established whether the result might be detrimental or not.

These were preliminary to the later correspondence which was produced.

Mr. JONAS. Gentlemen, does this conclude the hearing?

Mr. PARKHILL. I have no further evidence to submit on H. R. 846, which is a bill for the relief of Henry Krueger.

Mr. JONAS. Then you have nothing further to offer.

I want to say that I want to compliment all the parties who were kind enough to come and testify, including counsel for the mink breeders, who is here to represent his clients. I appreciate the cooperation you have given the committee, in that you have come here from Chicago on this case.

We appreciate the testimony given by all the witnesses.

The committee will carefully weigh all the evidence we have received and we will arrive at something which will assist us in reaching a verdict based on the facts. It is not merely speculation.

Mr. PARKHILL. I would be most ungrateful if I did not express my appreciation to both Dr. Byerly and Dr. Enders. I am deeply grateful.

Dr. BYERLY. I do not know how to interpret his remark.

Mr. JONAS. The hearing is concluded.

(Thereupon, the hearing was concluded.)

(The following was submitted later for the record:)

BRIEF IN SUPPORT OF H. R. 846, FOR THE RELIEF OF HENRY J. KRUGER

The United States Court of Claims has no jurisdiction to hear and consider, nor to grant relief to this claimant.

The Court of Claims is a court of limited jurisdiction, and has only such jurisdiction as is conferred upon it by the acts of Congress (*Mississippi Valley Iron Company* v. *United States*, 61 Federal Supplement 347).

Title 28, section 250, subdivision No. 1, enacted March 3, 1911, and as amended June 25, 1948, provides as follows:

"Claims against United States.

"First. All claims founded upon the Constitution of the United States or any law of Congress, upon any regulation of any executive department, upon any contract, express or implied, with the Government of the United States, or for damages, liquidated or unliquidated, in cases not sounding in tort, in respect of which claims the party would be entitled to redress against the United States if the United States were suable."

The jurisdiction section further provides for hearing and determining set-offs, counter-claims, claims of the United States against any claimant, and likewise claims of paymasters, quartermasters, commissary of subsistence, or other disbursing officer of the United States, or his administrators or executors, for relief from responsibility on account of loss by capture or otherwise, while in the line of his duty, of Government funds, vouchers, records, or papers in his charge, and for which such officer was and is held responsible.

The Court of Claims has no general jurisdiction over claims against the United States and can take cognizance only of those which by the terms of some act of Congress are committed to it (*Thurston* v. *U. S.* (Ct. Cl. 1914), 232 U. S. 469).

If aside from the facts that the adversary party is the United States, there exists any reason or rule of law why a court has not jurisdiction of the claim or of the relief sought, then jurisdiction is not conferred by the sections (*Sioux City & St. P. R. Co.* v. *U. S.*, 36 F. 610).

Four distinct classes of cases are contemplated under the statute:

(1) Those founded upon the Constitution or any law of Congress;
(2) Cases founded upon a regulation of an executive department;
(3) Cases of contract, expressed or implied, with the Government;
(4) Actions for damages, liquidated or unliquidated, in cases not sounding in tort.

The words "not sounding in tort" are in terms referable only to the fourth class of cases (*Dooley* v. *U. S.*, 182 U. S. 222; *U. S.* v. *Lynch*, 188 U. S. 445; *U. S.* v. *Buffalo Pitts Co.*, 193 F. 905; *Christie St. Commission Co.* v. *U. S.*, 136 F. 326).

A claim having no foundation in law but depending entirely on the genorosity of the Government constitutes no basis for action of the Court of Claims (*Emerson* v. *Hall*, 10 L. Ed. 223; *Blagge* v. *Balch*, 162 U. S. 439).

Claims based upon inchoate rights, where some definite action on the part of an executive department or officer is needed to give the party a vested right, are not cognizable by the Court of Claims (17 Ct. Cl. 147).

The statute does not confer jurisdiction to hear and determine actions for damages sounding in tort, but only where the damages do not sound in tort (*Thierman & Frost* v. *U. S.*, 51 Ct. Cl. 35).

In *Schillinger* v. *U. S.* (155 U. S. 163), wherein the court said that "some element of contractual liability must lie at the foundation of every action" in that court, meaning the Court of Claims; and in *Gibbons* v. *U. S.* (8 Wall. 269), wherein the court said, "A policy imposed by necessity forbids that the United States 'should hold themselves liable for unauthorized wrongs inflicted by their officers on the citizen, though occurring while engaged in the discharge of official duties'" (*Morgan* v. *U. S.*, 14 Wall. 531; *Langford* v. *U. S.*, 101 U. S. 341; *U. S.* v. *Jones*, 131 U. S. 1; *German Bank* v. *U. S.*, 148 U. S. 573; *Hill* v. *U. S.*, 149 U. S. 593; *Belknap* v. *Schild*, 161 U. S. 10; *U. S.* v. *Buffalo Pitts Co.*, 234 U. S. 228; *Basso* v. *U. S.*, 239 U. S. 602; *Carpenter* v. *U. S.*, 42 F. 264; *Boice* v. *U. S.*, 42 F. 761; *Holmes* v. *U. S.*, 78 F. 513; *Coleman* v. *U. S.*, 181 F. 513; *Dykes Case*, 16 Ct. Cl. 289; *Walton* v. *U. S.*, 24 Ct. Cl. 372; *McArthur* v. *U. S.*, 29 Ct. Cl. 194; *Gibson* v. *U. S.*, 29 Ct. Cl. 18; *Hayward* v. *U. S.*, 30 Ct. Cl. 219; *Johnson* v. *U. S.*, 31 Ct. Cl. 262; *Ingram* v. *U. S.*, 32 Ct. Cl. 147; *Berger* v. *U. S.*, 36 Ct. Cl. 246; *Mann* v. *U. S.*, 32 Ct. Cl. 580; *U. S.* v. *Atlantic Dredging Co.*, 253 U. S. 1; *State Savings Bank of Ortley* v. *U. S.*, 59 Ct. Cl. 621; *Klebe* v. *U. S.*, 263 U. S. 188; *Pendleton* v. *U. S.*, 56 Ct. Cl. 222; *Keokuk, etc., Bridge Co.* v. *U. S.*, 55 Ct. Cl. 480).

Claimant in addressing his petition to the Congress for relief is basing his claim neither upon any action at law, nor by suit in equity, for the relief in court is not available. There is no privity of contract whatsoever between the claimant and the United States. His claim arises from a grievous wrong which has caused him great financial losses, all because of the negligent, careless, and unconscionable actions of the Department of Agriculture of the United States Government wherein various officers, agents, and employees of the Department of Agriculture urged and recommended to this claimant the use of chicken waste as feeding material for mink; that your claimant relied upon the recommendations of the officers, agents, and representatives of the Department of Agriculture to supply him with reliable, factual material and followed said recommendations; whereas the Department of Agriculture and its representatives prior to the time this claimant suffered the losses set forth in his petition knew full well, or by the exercise of any ordinary care should have known that the feeding of chicken waste, where such chickens had been indoctrinated with the chemical substance called diethylstilbestrol, would sterilize both male and female mink which fed on such waste, and said Department of Agriculture in spite of the

fact that they knew full well the results of such feeding by mink breeders to their animals, continued to issue propaganda and information to the fur-bearing industry that the feeding of chicken waste was recommended by such Department. The claimant in this proceeding feels that in view of all the circumstances which will be fully developed at the hearing, he has a just claim against his sovereign, sounding neither in law nor in equity, but a claim arising because of common justice and fair dealing on the part of his Government toward him. The Congress of the United States can and does consider claims such as this to reimburse its citizens for losses which they incur because of some act or deed on the part of the Government or its representatives, and which are not cognizable in any court of the United States. The claimant has herein fully set forth the statutory reasons why he has not resorted to action at law, and files this brief for the purpose assisting the committee in determining the fact that he has sought the only remedy open to him in requesting this legislation for his relief.

Respectfully submitted.

OLIVER M. LOOMIS, *Attorney for Claimant.*
BRUCE PARKHILL, *Attorney for Plaintiff.*

[From the American Fur Breeder, November 1948, p. 40]

THE COMPARATIVE VALUE OF POULTRY WASTE AND HORSE MEAT FOR FEEDING MINK

(By Charles F. Bassett and Ford Wilke, U. S. Fur Animal Experiment Station, Saratoga Springs, N. Y.)

Poultry waste is rapidly assuming a position of importance as a diet ingredient in the feeding of ranch-raised mink. Within the past 2 years many mink ranchers have begun using it as a substitute for horse meat in their rations. For various reasons horse-meat, which has long been the stand-by for ranchers, is becoming a scarce and expensive product. The amount of poultry waste available for use in mink feed, on the other hand, should increase in amount in the years to come, since the amount of poultry marketed in recent years, barring minor fluctuations, has increased rather than declined in both numbers and total weight. The total weight of heads, feet, and entrails accumulating at a modern poultry dressing plant in a single day represents a vast amount of food if it is all utilized.

This material is comparatively easy to procure in most localities, and is inexpensive, often being obtained merely for the labor of hauling, since dressing plant operators are generally glad to dispose of it. Furthermore, it is a palatable feed for mink.

Morris (1946)[1] found that the composition and biological value of a blend of poultry viscera, feet, and heads compared favorably with horse meat for feeding dogs, and concluded that this product could be fed in the same proportion as horse meat when used as a substitute.

Hartsough (1946)[2] reported on feeding tests in which poultry waste used as a complete and as a 50 percent replacement for horse meat in mink diets maintained the health of the animals and gave production equal to that of the control animals.

Because the poultry waste used in the experiments cited above had been cooked, two feeding trials were conducted during the summer and fall of 1947 to ascertain how raw poultry waste compared in feeding value with horse meat for both growing and adult mink.

The poultry waste used in this experiment was obtained from a local concern, and consisted of the heads, feet, and entrails of freshly dressed chickens. The gizzard linings and their contents, plus any celluloid or metal leg bands, were sorted out and removed prior to grinding.

During the summer and early fall the poultry waste used consisted largely of viscera from broilers and fryers, and consequently did not contain as high a percentage of fat as in the late fall and early winter when more old hens, many of which were in various stages of the laying cycle, were dressed.

In one trial, 111 kits were allotted by chance to three groups when they were weaned at 49 days of age, and fed the diets given in table 1. Animals were confined in individual pens, fed twice daily, and weighed every 2 weeks.

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[1] Morris, Mark L., Poultry Byproducts for Feeding Pet Animals. North American Veterinarian, vol. 27, pp. 703–704 (November 1946).
[2] Hartsough, G. R., Our Present Feeding Problems, National Fur News, vol. 17, No. 7, pp. 7, 26 (August 1946).

In the second trial, 59 adult mink (52 female, 7 males) were similarly allotted and handled, but were weighed every 4 weeks.

GENERAL HEALTH

Four kits and three adults died during the progress of these experiments. With the possible exception of one kit, none of the animals were lost because of faulty nutrition or food poisoning. All animals completing both experiments appeared in excellent health.

FOOD CONSUMPTION

Food consumption per kit for the 166-day experimental period was 71, 72, and 76 pounds for lots 1, 2, and 3, respectively, while the adults, during their 156 days on experiment, consumed 57, 56, and 54 pounds per animal. These differences are not significant.

TABLE 1.—*Diets fed and animals per group in two feeding trials using poultry waste as a partial and as a complete substitute for horse meat.*

	Diet composition					
	Lot 1		Lot 2		Lot 3	
	Percent		*Percent*		*Percent*	
Horse meat	35.0		17.5			
Chicken waste			17.5		35.0	
Liver	5.0		5.0		5.0	
Commercial cereal	20.0		20.0		20.0	
Tomato pomace	2.0		2.0		2.0	
Yeast	1.0		1.0		1.0	
Fortified cod liver oil	.4		.4		.4	
Water	36.6		36.6		36.6	
Total	100.0		100.0		100.0	
	Animals per group		Animals per group		Animals per group	
	Male	Female	Male	Female	Male	Female
Kit feeding trial	21	16	23	14	21	16
Adult feeding trial	2	18	3	17	2	19

It was observed early in the experiment that those kits receiving poultry waste as a complete substitute for horse meat (lot 3) were gaining weight rapidly, and these gains continued until the kits had passed the period of most rapid growth (112 days), when, having nearly reached their maximum growth capacity, the gains began to taper off. The horse-meat group and, to a lesser degree, the combined horse meat-poultry waste animals grew more slowly, but the growth continued longer. As a result, when the experiment ended there was no significant difference between animals of the three groups in average weight. Statistical treatment of the data (table 2) indicates that the lot 3 kits, both males and females, were significantly heavier at 91 days of age than the males and females receiving horse meat, and that the lot 3 females at 112 days were significantly heavier than those of lot 1.

TABLE 2.—*Weight gains: Average weight of mink kits at 91, 112, and 175 days*

[Pounds]

	91 days		112 days		175 days	
	Males	Females	Males	Females	Males	Females
Lot No. 1, horse meat	[1] 1.764	[1] 1.268	2.092	[1] 1.419	2.513	1.765
Lot No. 2, horse meat and poultry waste	1.855	1.328	2.225	1.505	2.604	1.759
Lot No. 3, poultry waste	1.877	1.355	2.175	1.558	2.569	1.836

[1] Significantly lighter than comparable animals of lot No. 3.

This is an important point for those who are interested in obtaining good growth early in the life of the mink kit. The poultry waste diet gave that early growth to a greater degree than did the horse meat or the combination of poultry waste and horse meat.

The average weight gains of the adult mink were 0.34, 0.34, and 0.32 pounds for lots 1, 2, and 3, respectively. These gains were not spectacular, nor were the differences between groups significant.

FUR STUDIES

No attempt was made to grade or place the pelts from the seven animals pelted from the adult experiment. Forty-one skins (11, 16, and 14 from lots, 1, 2, and 3, respectively) were available for study from the kit experiment. Experts from a large New York fur auction company graded these skins, and in their opinion pelts from the poultry waste group (lot 3) were significantly poorer than those from either of the other lots. The poor showing of the lot 3 group was due primarily to the fact that 4 out of the 14 skins were classified as "pullers" for the guard hair came out when pulled. Since 10 of the 14 pelts were normal in appearance and comparable in every respect to skins from the other two groups, it is difficult to see how the diet could have been responsible for these four poor pelts. Definite information in this respect, however, must await further experimentation and the grading of a greater number of skins from animals fed the poultry waste diet.

PROCESSING THE CHICKEN WASTE

There is a feeling among veterinarians who have worked with mink, and also among mink ranchers, that chicken waste should be thoroughly cooked before it is fed to mink so that the danger of losses from various types of food poisoning, particularly that resulting from the the presence of Salmonella bacteria, may be eliminated. Because of their previous experience with outbreaks of food poisoning, it is felt that these individuals are perhaps in a much better position to make recommendations concerning the processing of poultry waste than are the writers. Presumably the rancher should exercise his own judgment in determining what procedure should be followed. Experiments now in progress should help to answer this question more completely in the years to come. The poultry waste used in these two feeding trials was not cooked, but it was obtained while fresh, promptly ground and frozen, or when time did not permit immediate grinding, was frozen first, then thawed, ground and incoporated in the diet.

SUMMARIZATION

Preliminary feeding tests with kit and adult mink during the summer and fall have indicated that poultry waste consisting primarily of the head, feet, and entrails of chickens obtained fresh from local dressing plants can be satisfactorily used either as a partial or complete substitute for horse meat. It is relatively easy to obtain, and under ordinary circumstances very inexpensive.

Its use in the diet of the young mink will result in good food consumption because of its palatability. It has proved to be an excellent diet ingredient in stepping up the growth rate of kits from 49 to 112 days. When judged by fur experts in New York City, the pelts, with the exception of four undesirables which were graded as "pullers," were as desirable as those produced on diets in which horse meat alone was used.

In the diet of adult mink chicken waste proved to be fully as satisfactory as horse meat.

We believe it is advisable to exercise great care in the handling of poultry waste. In order to avoid possible losses from food poisoning, this material should be procured while fresh, immediately processed, properly refrigerated, and thawed just prior to its use.

[From the National Fur News, July 1949, p. 10]

Feeding Turkey Heads to Mink

(By John R. Gorham, D. V. M., M. S., Fur Animal Research Laboratory, U. S. Bureau of Animal Industry, in cooperation with the State College of Washington, Pullman, Wash.)

What happens to a dog when a child playfully puts a rubber band around its tongue is what may happen to a mink when you are feeding ground turkey heads.

Mink ranchers living in areas where turkeys are raised commercially have been able to obtain turkey heads as a substitute for part of the meat portion of the ration. When the heads are ground the trachea (windpipe) is cut into many small sections or rings by the grinder plates. It is not uncommon for one of these rings to encircle and lodge around a mink's tongue.

The symptoms shown by the affected mink are usually characteristic. The mink appear hungry, yet they refuse to eat. Later, saliva collects at the corners of the mouth and the mink scratch at their mouths with their paws. When the mouth is opened the tongue is swollen and red to reddish black in color; the color is dependent upon the length of time the ring has encircled the tongue. The only satisfactory treatment is to take a pair of blunt-pointed scissors and snip off the section. If the piece of trachea is not removed the animal will soon die. Changing the size of the grinder plates may prevent the occurrence of the rings.

[From the National Fur News, July 1949, p. 16]

Practical Economies in Feeding Mink Kits[1]

(By Charles F. Bassett, Director, U. S. Fur Animal Experiment Station, Bureau of Animal Industry, Agricultural Research Administration, Saratoga Springs, N. Y.)

Ten years ago next month it was my privilege to attend your annual summer school and discuss with you the results of some of the studies that we had conducted. Some of you may recall that much of that discussion was concerned with the use of numerous substitutes for horse meat in the diets of silver foxes at all stages in their life cycle. I well recall one individual asking why we were so concerned with substitutes for horse meat in the feeding of foxes. He said, "There always has been and there always will be an abundance of old horses and of packing house viscera available for such purposes in the United States and Canada." It seems to me that the comparatively high prices and increased scarcity of old horses during the last 5 years, the accelerated demand for horse meat by manufacturers of cat and dog food, the depressed market for fox pelts, and the present condition of the market for mink skins have well justified the search we began 14 years ago for horse meat substitutes that would be economical yet suitable for inclusion in the fox and mink diet.

If you were to turn back to the trade papers of 10 years ago you would be surprised, as I was recently, to learn the progress that has been made in the breeding, feeding, and management of mink, for we have come a long way in many respects. We have made progress. True, we have countless problems ahead of us awaiting solution, and at times it may appear that progress is painfully slow. Nevertheless, we have made progress. As an industry, we are increasing our knowledge of proper mink husbandry practices. On the whole, I believe we are feeding our animals more sensibly than we did a decade ago. We are beginning to outgrow our baby clothes and are progressing toward adulthood.

And so, today, I would like to discuss with you the results of some of our recent studies with mink, pointing out what, in my opinion, these results mean and how they can be adapted to your own ranch-management practices to lower your production costs. Because this year's crop of mink kits have, for the most part, arrived, you will perhaps be interested in the summer and fall feeding of growing mink, and hence this discussion will be limited largely to that phase of mink management.

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[1] This talk was given at the Ontario Fur Breeders' Association summer school, held at the Ontario Agricultural College, Guelph, Ontario, on May 16, 1949.

ECONOMIES FROM THE ELIMINATION OF VITAMIN SUPPLEMENTS

The importance of vitamins in the diet fed to growing mink is a subject that is always of interest to mink ranchers everywhere. You have read much about vitamins in articles and advertisements appearing in the trade papers, and you perhaps have heard much about the necessity of including certain vitamins in the diets fed to other species of livestock. Because you strive to produce top-quality pelts, and because there is little information as yet on the vitamin requirements of growing mink, you do not wish to take a chance on having your mink undernourished, or on having some dietary deficiency develop. So you add vitamin and mineral supplements at considerable extra cost, in the hope that if the diet fed is deficient in one or both of these factors, these additions will remedy that deficiency.

What are the facts concerning the vitamin requirements of growing kits from weaning to pelting? What do adult mink require in vitamin supplementation during the summer, fall, and early winter? Three experiments on the requirements of growing mink for vitamins A, C, and D have shown that it is pretty hard—yes, well nigh impossible—to devise a diet that does not contain adequate quantities of these three vitamins, if use is made of the ingredients that are common to most mink rations.

Mink kits fed a diet purposely planned to be low in vitamins A and C failed to develop any deficiency symptoms, even though the same diet fed to growing foxes resulted in 63 percent of the animals evidencing vitamin A deficiency symptoms. The full details of this experiment can be obtained from the June 1948 Journal of Nutrition, pages 629 to 638, so they will not be recorded here. The diet fed these kits contained 10 percent horse meat, 11.2 percent cookie crumbs, 4.7 percent dried yeast, 5.8 percent wheat-germ meal, 5.8 percent rolled oats, 5.6 percent bread crumbs, some soybean meal, beef meal, ground limestone, skim-milk powder, and 48.6 percent water.

Would you feed a diet of that type to your mink? Would you include only 10 percent horse meat and omit liver, tripe, fish, poultry waste, or similar meat and visceral products? The answer is obviously "No," and yet this diet produced no observable vitamin A or C deficiencies in our mink kits. How much vitamin A and vitamin C does a growing mink need? To my knowledge, no one knows that answer yet, but quite obviously the above diet, although purposely planned to be low in these two vitamins, still carried enough to satisfy the requirements of growing mink.

Consider for a moment the diets that mink ranchers the country over are feeding. Think of the high percentage of meat and visceral products that are included. Think of the vegetables that are fed, particularly tomatoes and carrots, rich sources not only of vitamins A and C but also of carotene, which the body converts into vitamin A. Think of the beef and horse livers, as well as the Telang livers, that are such abundant sources of vitamin A. Do you think for one moment, then, that you need to worry about adding either vitamin A or C to the diet you feed your growing mink?

But you may ask, "How about vitamin D? Isn't that necessary for growing kits?" The answer is "Yes, we believe so." "Then wouldn't it be wise to add some fortified cod-liver oil to the mink diet in order that we may make sure we have ample amounts of vitamin D available for our growing kits?" That question may be answered by giving the results of an experiment we conducted recently. Thirty-two kits were included in each of four groups, all of which received the same basal diet and, in addition, 0, 15, 50, and 200 I. U. of vitamin D per day per kilogram of bodyweight. These kits were kept in a building shaded artificially in such a manner that no direct sunlight could enter. They were weighed once a week, and following the weighing were given their respective vitamin D dosages, based on the weight that had just been taken. The results indicated that those kits receiving no vitamin D were as satisfactory in every respect as those given this vitamin at various levels. These results do not mean that the growing mink requires no vitamin D. They do mean that the requirement is probably less than the amounts supplied by the basal diet which was purposely selected to be low in this vitamin.

Recent research at the University of Wisconsin by Schaeffer, Whitehair, and Elvejhem indicates that mink need relatively large amounts of folic acid, a vitamin of the B complex. Liver is a rich source of this vitamin and also contains other as yet unidentified factors which may or may not be necessary in mink nutrition. We feel, therefore, that liver should constitute an important ingredient in the mink diet throughout the year, and should comprise 5 percent

of the diet, except during the breeding, gestation, and suckling periods, when the amount fed should be increased to 7½ percent.

With regard to adult mink, it is logical to assume that the vitamin requirements during summer maintenance and fur growth are no greater than those of growing kits. Such an assumption would govern any recommendations until positive evidence to the contrary is available.

In the absence of information of any kind concerning the vitamin requirements of adult mink during reproduction and lactation, no recommendations can be made except to follow those practices that in the past have given good results.

Vitamins are undoubtedly important in mink nutrition, but the average rancher has become too vitamin conscious. Include 5 percent liver in your mink diet (7½ percent during reproduction and lactation); add at least 5 percent green, leafy vegetables, tomatoes, or carrots; and see that the cereal mixture you use contains enough brewers' yeast so that every 100 pounds of the wet mixture fed contains 1 to 1½ percent. Then forget the purchase and use of additional vitamin supplements during the period from July 1 to January 1. Your cost of production can be considerably reduced in this one respect alone.

ECONOMIES FROM USING SURPLUS FAT

Another saving in feeding costs to many mink ranchers will result from a slight change in their feeding procedure—not to throw away the surplus fat on the horses slaughtered, on the tripe and udders purchased, or in the poultry waste used, but to grind and mix it in the diet.

On numerous occasions you have read or have been told to cut every bit of fat from the horses you process and from the tripe you buy, because the pelts will turn brown. This may be true if certain oils or fatty fish are used, although I doubt it. Certainly it is not true with regard to horse and beef fat.

What are the facts regarding fat digestion by mink? Preliminary digestion trials by Loosli, Smith, and Maynard at Cornell University in 1938 indicate that "the fats were generally utilized by mink. Their apparent digestibility was, in most cases, higher than that of protein or dry matter." They conclude their discussion with this statement: "It is probably safe to conclude that fat is an excellent source of energy for mink."

You are probably familiar with an experiment, reported in the trade papers last year, which we conducted in 1947. Twenty kits were included in each of four groups and fed levels of 0, 10, 20, and 30 percent beef fat. This fat was in addition to that present in the diet ingredients. These kits were started on experiment when weaned at 49 days of age, and continued until they were pelted late in November.

Those animals receiving no added fat ate 88 pounds of feed during the course of the experiment. Those receiving 30 percent fat ate 30 pounds—about one-third as much. Animals fed at the 10- and 20-percent levels ate 53 and 36 pounds, respectively. This reduced food consumption is proportional to the difference in energy values between fats and carbohydrates. There was no difference in the health or well-being of the animals that could be traced to the diets fed. Females fed fat at the 30-percent level weighed significantly more than the females of any other group at the end of the period of most rapid growth (112 days), and at the end of the experiment, although there was no difference among the males of the four groups in this respect.

On the basis of fur studies conducted at the station, there was no significant difference between the pelts of the four groups. Feeling that our opinion might be biased in this respect, we sent the skins to New York City for examination by experts in the fur trade. In order that their opinions should be unbiased, the experts were not told what the mink had been fed until the pelts had been graded. Their opinion was stated as follows: "No significant difference existed between the skins from animals fed fat at the four levels studied."

Although selling price is not always a reliable indication of pelt value, you may be interested to know that pelts from animals fed 20 percent fat brought $15.69 and those from the 10-percent-fat group $15.16. Pelts from the other two groups brought $15.25 (30 percent fat) and $15.55 (no fat).

The fat used in this experiment consisted of kidney and cod suet from beef carcasses. Certainly the fat trimmings that are readily available to you at little cost from the horses you slaughter and the tripe you buy can be used in the mink diet without harm to either the animal or its pelt.

A word of caution may be in order. In planning any diet, common sense must be used in determining the amounts of the various ingredients that should be added. On the basis of our present knowledge, it would seem advisable to limit the amount of fat in the diet of growing mink to 5 or 10 percent of the total weight fed.

You may wonder why a recommendation of only 5 to 10 percent of added fat is made, when mink fed diets containing 30 percent additional fat ate so much less feed, weighed as much or more, and produced as satisfactory pelts as those receiving no added fat. There are two reasons why, at the present time, we do not wish to recommend feeding fat at the 30-percent level. First of all, this experiment was conducted with a limited number of animals for 1 year only. We feel it should be repeated with a larger number of animals and the results verified before recommending the inclusion of such a high percentage of fat. Secondly, when large amounts of fat are included in the diet, the protein, vitamin, and mineral content must be stepped up in order to make sure that quantities of these nutrients adequate for growth will be available when consideration is given to the reduced food intake. At the present time we are not ready to make such recommendations. These results indicate, however, the desirability of including some fat in the mink ration. We feel that levels of 5 to10 percent can safely be included in diets such as are fed by mink ranchers today, and the resultant savings in food (up to 35 percent) will well warrant its use.

ECONOMIES FROM A REDUCTION IN PROTEIN CONTENT

Fur ranchers in general, and those raising mink in particular, for many years have followed the practice of feeding their animals diets containing very high percentages of meat, fish, and visceral products. It is not at all uncommon even today to hear of diets being fed that contain from 65 to 85 percent horse meat, or horse meat and fish.

For a number of years, you may recall, we at the station have declared that the prevailing practice of feeding such high percentage of meat and meat products was not only unnecessary and uneconomical, but at times and under some circumstances could be definitely harmful. Articles have appeared from time to time in the trade papers during the past 2 years, from some persons high in the industry, warning against the inclusion of excessively high amounts of meat in the mink diet. Dr. A. H. Kennedy, of Ontario Veterinary College, recently published an article on this subject.

Two articles originated at our station within the last 18 months on the protein requirements of growing mink. In 1944 we conducted an experiment with 140 mink kits to determine their protein requirement at three stages of growth. It was concluded that a protein level of 9½ to 11 percent, on a moist basis (or 28 to 34 percent on a dry basis) was optimum for normal growth. Remember that the 9½ to 11 percent protein level recommended is on a moist or "as fed" basis.

Few of the hundreds of mink ranchers writing us annually feed diets that average as low as 12 percent protein content, and many are as high as 15 percent (moist basis). Since protein is generally the most expensive item in the ration, it is obvious that great savings will result if we feed lower levels of it to our mink. Furthermore, if the protein comes from several different sources, instead of from horse meat alone, the quality will, in all likelihood, be higher, and the digestibility may be greater.

Perhaps this discussion on protein will be clarified if a specific example is used. Some time ago a rancher wrote to the station, indicating that he was experiencing difficulty with his mink. At our request, he submitted his feeding formula, which contained far more protein than we believed necessary. We suggested a revised formula that not only brought his protein level more in line with what we find to be most desirable, but also resulted in considerable

savings in his feeding costs. Here are the two diets, with the comparative costs:

Ingredient	Percent protein	Cost per pound	Rancher's diet			Suggested diet		
			Pounds fed	Total protein	Total cost	Pounds fed	Total protein	Total cost
Commercial cereal [1]	11.0	$0.050	11	1.210	$0.550	10	1.800	[2] $0.664
Yeast	45.0	.135	1	.450	.135			
Tomato pomace	22.6	.030	1	.226	.030			
Vegetables [3]	1.0	.025	5	.050	.125	10	.100	.250
Horse meat	18.0	.075	95	17.100	7.125	20	3.600	1.500
Lungs	16.0	.040				10	1.600	.400
Lake or ocean herring [4]	10.0	.035				5	.500	.175
Tripe	16.0	.040				10	1.500	.400
Liver (beef)	20.4	.1975				5	1.020	.988
Fat [5]	24.2	.080				5	.121	.400
Potatoes (cooked)	2.5	.010				5	.125	.050
Water			12			20		
Total			125	19.036	7.965	100	10.366	4.827

[1] Commercial cereal varies in protein content. We feel it is more economical to buy those commercial cereals with the higher protein content.
[2] Cost $0.0664 per pound.
[3] Vegetables may consist of tomatoes, carrots, outer leaves of cabbage, lettuce, lawn clippings, apples, etc.
[4] The protein content of whole herring is estimated at 10 percent. Atlantic herring analyzes 9.7 percent, while lake herring analyzes 10.4 percent, according to U. S. D. A. Circular 549.
[5] Use fat from tripe, beef carcasses of from horses that have been processed.

NOTE.—125 times 4.827 equals 6.034. Total pounds protein 19.035 divided by total pounds of diet mixed (125) equals percent protein 15.23 percent (rancher's diet). Total pounds protein 10.37 divided by total pounds of diet mixed (100) equals percent protein 10.37 percent (suggested diet).

One hundred and twenty-five pounds of the suggested diet would cost approximately $6.03, which is a saving of $1.93 each day, or approximately 25 percent. The 125 pounds of feed should take care of the daily requirements of 250 to 300 growing mink, depending on the age, species, and time of year. If a rancher kept 1,000 mink instead of 250 or 300, his savings would be considerable.

A diet of the type suggested will not only result in a substantial saving in feed costs but, of even greater importance, will be more satisfactory nutritionally, for the animal protein comes from several different sources instead of from horse meat alone. This insures a greater variety and more even balance of the essential amino acids so necessary for growth and maintenance. Finally, the inclusion of liver and lake or ocean herring should fortify the vitamins present in the diet and provide a more diversified mineral content.

ECONOMIES FROM USING WASTE PRODUCTS

At the beginning of this talk mention was made of the work that had been conducted on the use of substitutes for horse meat in the feeding of foxes at all stages in their life cycle. Considerable work has been done in testing the value of certain substitutes for horse meat in the diet of growing mink, and from time to time during the past 10 years reports of the results obtained have appeared in the fur-farming magazines.

The purpose of this research was not to change the feeding practices of mink ranchers who had ample supplies of old horses, packing-house byproducts, or fish available at low prices. Rather it was to determine what products were readily available at little cost that could satisfactorily replace, in part at least, the meat portion of the mink diet when meat was scarce or no longer available. That time is rapidly approaching in the United States, and you perhaps have a similar condition in Canada.

Our standard price for old horses at the station for many years has been $5. Now with dog and cat companies bidding against one another for old horses and paying from $30 to $40 each at auction, the mink farmer in our region must pay at least those prices if he is to obtain any of the product. What can he use in place of horse meat? What is available at prices he can afford?

One product, formerly thrown out, concerning which you have probably heard a great deal, and which appears to hold great promise, is poultry waste. This consists primarily of the head, feet, and entrails of chickens, although the heads and necks, as well as the entrails of turkeys, are also very desirable for feeding mink.

One year's work with growing kits has shown that poultry waste gave a faster initial growth than horse meat when these two products each constituted 35 percent of the diet. Just prior to pelting, there was no significant difference between the groups in average weight or in quality of pelt produced. A complete report of this experiment, including the safeguards that must be observed in feeding the product, was published in the Canadian and American fur-farming magazines last summer and fall.

In addition to poultry waste, tripe and canned fish have been tested as partial substitutes for horse meat and have proved satisfactory, as you undoubtedly know from your own experience. Lungs, udders, spleens, beef and horse intestines, gullets, and similar visceral products have not been tested experimentally on mink at the station, but the practical feeder knows that they can be used at times in small amounts without harm to the mink.

In the field of desiccated products, mink ranchers have not as yet fully explored the possibilities that exist. One experiment conducted in 1942 with 258 weaned kits gives some indication of the possibilities that lie ahead in the use of these products. Six experimental diets were used. The control group against which all the others were checked received 28 pounds of horse muscle meat, 10 pounds of viscera, and 2 pounds of blood in each 100 pounds of the mixture as it was fed. All other groups received one-half the amount of these three ingredients and, as a replacement for the meat viscera, and blood, received 6 pounds of beef meal, 6 pounds of soybean meal, 6 pounds of cottonseed meal, 6 pounds of peanut meal, and 6 pounds of corn-gluten meal, respectively. In addition, each diet contained 5 percent fresh frozen liver. In all other respects the diets were similar. Pelts from the six groups were graded by experts of the fur trade in New York City, who stated that the skins from animals receiving the cottonseed meal were the best of the six, but that any difference between this group and the groups receiving beef meal, soybean meal, and corn-gluten meal was very slight. Pelts from animals receiving peanut meal did not have the color found in those of the first four groups, but the fur development and fur coverage of all five groups were good.

The control group receiving horse meat, viscera, and blood to the extent of 40 percent of the diet-produced pelts that were the poorest of all groups tested. These pelts, in the words of the experts, "were not nearly as nicely furred as the other five groups and contained a high percentage of off-colored pelts." None of the pelts examined, in the opinion of the judges, were overfinished but were prime and highly desirable from a commercial standpoint.

What can the research that I have described this afternoon mean to you? Where can you use it in feeding your kits this summer? That will depend a great deal on the problems you face, on the food materials that are available to you but at present are unused, on your ingenuity and on your imagination. You can produce good mink pelts at considerably lower cost than in the past if you care and dare to follow some of the suggestions that have been given you this afternoon.

[From the National Fur News, July 1949, p. 24]

HORSE MEAT SUBSTITUTES FOR GROWING FOXES

(By Ford Wilke and Charles F. Bassett, Fur Animal Experiment Station, Bureau of Animal Industry, Agricultural Research Administration, USDA, Saratoga Springs, N. Y.)

Substitutes for the horse meat used in the feeding of fur animals have been a subject of concern to progressive ranchers for many years. Today, when they are faced with the almost impossible task of keeping production costs down to the level of pelt prices, it is an economy that cannot be ignored. Many of the experiments reported from the United States Fur Animal Experiment Station, Saratoga Springs, N. Y., have dealt with the use of various feeds, including beef meal, liver meal, soybean meal, peanut meal, linseed meal, and tripe, as replacements for horse meat. With the exception of the animals fed linseed meal,

foxes given these substitute feeds, either singly or as a combination of two or more, grew well and produced pelts that were usually superior to those from animals that received a control diet containing 40 percent horse meat.

In addition to the desiccated products comprising most of the protein concentrates previously tested, there are several possible sources of fresh protein feeds. The most important of these sources is the small local slaughterhouse which ordinarily lacks facilities for utilizing its byproducts. From them can be obtained blood, udders, tripe, intestines, spleens, and lungs. Hatcheries which must annually dispose of millions of nonhatchable eggs furnish another source. Creameries produce condensed buttermilk, which, although it is a product in good demand, and may be more expensive in some areas than feeds from the other sources mentioned, is an excellent emergency feed because it does not require refrigeration.

Tripe, lungs, and condensed buttermilk have been commonly used as minor feed ingredients but seldom as a complete replacement for the horse-meat portion of the diet. In order to determine the comparative value of tripe, udders, lungs, blood, hatchery eggs, condensed buttermilk, and horse meat with bone, feeding trials with growing foxes were run in 1947, using each of these materials as the only supplement to a commercial cereal.

EXPERIMENTAL

One hundred and thirty-four fox pups (80 males and 54 females) were weaned at 49 days of age and allotted by chance to seven groups. The number of animals included in each group and the composition of the diets are shown in table 1.

TABLE 1.—*(A) Composition of diets and (B) number of animals in lots*

Ingredients	Lot No.						
	1	2	3	4	5	6	7
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
(A) Commercial cereal	30	30	30	30	30	30	30
Horse meat and bone	21	25					
Tripe			31	23			
Udders					24		
Lungs						25	
Blood							34
Hatchery eggs					4		
Condensed buttermilk					1		
Beet pulp			1		41	45	36
Ground limestone	49	45	38	47			
Water							
Total	100	100	100	100	100	100	100
Estimated protein level of moist diet	10.4	10.4	10.4	10.4	10.7	10.4	10.4
(B) Number of animals:							
Males	12	12	12	11	11	11	11
Females	8	8	8	7	8	7	8

The diet originally planned to contain blood, which consisted of 30 percent commercial cereal, 25 percent blood, and 45 percent water proved too wet to feed. Four percent of the water was replaced with beet pulp to correct this condition.

By June 24, it appeared that the animals receiving udders and blood were developing symptoms of rickets. One percent finely ground limestone was added to each of these diets to correct this condition, and the water was reduced an equal amount.

The cereal content of all diets was uniform. Products comprising the meat or meat-substitute portion of the diet were added to an extent sufficient to maintain the estimated protein content of the moist diet between 10.3 and 10.7 percent, a level that prior experimentation has indicated is adequate for normal growth, if the protein is of good quality.

TABLE 2.—*Food consumption and total cost of food per fox from weaning to pelting*[1]

Ingredient	Food consumption	Average feed cost per fox [1]
	Pounds	
Horse meat	265	$10.34
Tripe	299	8.63
Udders	237	7.45
Lungs	320	8.98
Blood	246	9.24
Eggs	219	4.13
Buttermilk	250	8.12

[1] 50 to 220 days of age.

RESULTS

Food consumption

Hatchery eggs was the only one of the substitute feeds that was not palatable to the foxes. Their acceptance of this feed appeared to vary with its quality. When the feed contained a sufficient number of spoiled eggs to have a disagreeable odor, feed refusal increased. In addition to the change brought about by 18 days of incubation, a further effect resulted from the long cooking necessary to coagulate the eggs. This time was usually over 2 hours.

Weight gains

In a general way, there was a correlation between the weight attained by the foxes and the feed consumed. Foxes given udders were a notable exception. They reached the second heaviest average weight but required next to the smallest total amount of feed. The growth and maintenance of 1 pound of fox to pelting age required 25.8 pounds of the diet with tripe, as contrasted with 18.9 pounds of the diet containing udders. Undoubtedly the greater efficiency of the udders is due to their high fat content, which is 12 percent, whereas that of tripe is a poor source of fat, is 2.1 percent.

Tripe, udders, lungs, and the control material, horse meat, all gave excellent growth, ranking in the order named at 220 days. No significant difference existed for any comparison between the growth obtained with these diets. The growth obtained with condensed buttermilk was satisfactory but not completely up to the standard of the first division. The level of growth attained with blood and hatchery eggs was considerably lower and can be considered unsatisfactory. Most growth comparisons of animals given blood and hatchery eggs with those fed tripe, udders, lungs, or horse meat show that significantly poorer growth was obtained with the former two feeds.

TABLE 3.—*Weight of foxes at 160 and 220 days of age*

Lot No.	Ingredient	160 days		220 days	
		Males	Females	Males	Females
		Pounds	*Pounds*	*Pounds*	*Pounds*
1	Horse meat and bone	11.28 (0.95)	9.86 (0.36)	13.45 (1.13)	10.87 (1.14)
2	Tripe	10.94 (.40)	10.90 (1.22)	14.08 (.70)	12.15 (1.24)
3	Udders	11.00 (.90)	9.64 (.99)	13.73 (.88)	11.29 (1.03)
4	Lungs	10.32 (.75)	9.53 (2.02)	13.65 (.95)	11.20 (.61)
5	Blood	7.20 (1.38)	7.90 (.14)	11.65 (.92)	10.70 (.57)
6	Hatchery eggs	10.16 (.49)	9.10 (.78)	11.42 (.95)	9.80 (1.11)
7	Condensed buttermilk	10.21 (.65)	9.61 (1.15)	12.39 (.66)	11.06 (1.24)

NOTE.—Figures in parentheses equal standard deviation.

On August 12, six foxes from the lot fed blood were changed to a diet in which buttermilk was substituted for blood, and on September 16, five more foxes from the same group were changed to a diet in which half the blood was replaced with buttermilk. These changes were made in an attempt to test a supplement that might improve the growth and dull, rough appearance of these foxes. Growth improvement was slight, and the final weights of foxes given the buttermilk as a supplement or a substitute were about the same as for the animals given blood during the entire experiment.

Fur quality

It is reasonable to suppose that the pelts produced by a well-grown, healthy animal will be of as good quality as the animal's genetic capacity will allow. Occasionally examples appear which illustrate that this is not always true. Foxes of the group given hatchery eggs are one of these examples. They represent a peculiar combination of poor growth and the finest fur, according to gradings made by a New York fur auction house. Pelts were graded on a scale from 1 to 10. The higher the number assigned to a pelt, the poorer the pelt in the opinion of the graders.

TABLE 4.—*Relative grading and sale price of fox pelts*

Lot	Ingredient	Relative grading	Average selling price			
			All pelts	Silvers	White marks	Platinums
1	Horse meat	5.6	(10) 11.65	(5) 13.50	(5) 9.80	
2	Tripe	6.4	(10) 11.35	(5) 10.90	(5) 11.80	
3	Udders	7.1	(9) 11.94	(4) 12.63	(3) 9.67	(2) 14.00
4	Lungs	6.3	(9) 11.67	(6) 11.50	(1) 8.00	(2) 14.00
5	Blood	8.5	(12) 9.88	(5) 10.10	(4) 9.50	(3) 10.00
6	Eggs	3.6	(9) 10.89	(5) 11.40	(4) 10.25	
7	Buttermilk	4.7	(11) 12.27	(9) 12.33	(1) 10.00	(1) 14.00

NOTE.—Numbers in parentheses indicate number of pelts.

Diet	Number of pelts	Average selling price of pelt
Blood and cereal for entire period	4	$7.75
Half buttermilk, half blood and cereal after September 16	4	8.88
Buttermilk and cereal after August 12	4	13.00

Sale prices are not the most accurate data for comparing pelt quality, but when most of the pelts are sold on the same day, prices do furnish an extremely practical means of comparison. Foxes fed hatchery eggs were overrated and the ones given udders underrated in the column headed "Relative grading" (table 4), if such credit is to be given to sale prices.

DISCUSSION

Udders are the feed material with the greatest all-around value of any tested. Feed costs were low, averaging $7.45 per fox, because of comparatively small feed consumption; growth was excellent (average weight for males 13.73 pounds; females, 11.29 pounds); and the average pelt price of $11.94 was second only to buttermilk.

Tripe and buttermilk both ranked low on the basis of the cost per fox for feed. Tripe produced the largest foxes, but their pelts were of only average value. Condensed buttermilk gave fair growth and the highest pelt value. A further possible indication that condensed buttermilk may have an improving effect on pelt quality is furnished by a comparison of the foxes originally given a diet containing blood.

The number of pelts used in the above comparison were too few to be more than suggestive.

More information is necessary concerning methods of supplementing and handling hatchery eggs and blood before they can be classed as fully acceptable meat substitutes. Feeding trials should be run with eggs that have been incubated for lesser periods than 18 days, since feeding value and palatability is certain to increase.

SMITHTOWN, N. Y., *April 6, 1949.*

DEAR DR. SIEBOLD: I am sending one mink carcass for analysis. You will probably find bladder stones, as we lost two minks in January with that condition and so far we have not been able to find the cause or a treatment. I would appreciate any help you can give me to clear up that trouble.

My real problem is losing mink at the rate of one a month from undetermined causes. They appear healthy and contented; then, all of a sudden, droppings are dark, soon green and white slime, retching, lost appetite, paralysis, and death. Cause unknown.

This was my approximate feed formula until we had bladder-stone trouble:

	Pounds
Fresh chicken heads	20
Fresh ocean fish	20
Fresh liver or liver meal	2
Purina mink cereal	5
Alfalfa meal	1
Dried tomatoes	1
Yeast	¾
Steamed bonemeal	½
Cod-liver oil	----
Wheat-germ oil and meal (starting January)	----

After we found bladder stones we stopped the bonemeal and decreased the alfalfa meal and tomatoes, as the males had occasional bloody urine.

This year we could not get our males to work at mating time. They would try but nothing would happen, and there would be a fight. This happened to adults as well as kits. We thought we had them in good condition, not too fat, not too thin, but we had to borrow males to breed our 60 females.

Last summer we had food poisoning due to improper freezing storage. We used sulmet solution and had very few losses. Would this have any effect on the males at this time?

I do hope this mink arrives in good condition (dry ice seems to be impossible to get here), so you can try to give me a good report so desperately needed. We have been in mink business for 2 years and raised a good litter crop of Silverblu last year, but these unknown losses are getting us down.

Very truly yours,

FREDERICK KJAER.

P. S.: I got your name and address from Saratoga Springs when inquiring into the use of chicken heads.

F. K.

OCTOBER 18, 1949.

Mr. DOUGLAS MILLAR,
Yankee Breeding Farms,
Huntington, Long Island, N. Y.

DEAR MR. MILLAR: Sometime ago you wrote to Mr. Charles F. Bassett of the United States Fur Animal Experiment Station concerning the use of poultry waste that contains diethylstilbesterol. He asked my opinion of its effect on reproduction.

Could we secure from you some ovaries from mink that have been fed this material when you pelt? If we know your pelting day or dates, we could come up and take the ovaries without putting you to the trouble of collecting the material for us.

Yours very truly,

ROBERT K. ENDERS, *Agent.*

OFFICE MEMORANDUM

NOVEMBER 4, 1949.

To: Charles E. Kellogg, Fur Farming Investigations, Animal Husbandry Division, Bureau of Animal Industry, Beltsville, Md.
From: Charles F. Bassett, Director, United States Fur Animal Experiment Station, Saratoga Springs, N. Y.
Subject: Diethylstilbesterol in chicken waste.

You will perhaps be interested in some remarks that were made by Dr. H. B. Walters, a veterinarian and an experienced mink rancher, who visited the station yesterday afternoon. Dr. Walters' production of mink this past spring was very low. He told me he obtained 97 kits from 300 females carried over, and he blames the poor production entirely on the chicken waste which he fed, and which he believed contained the heads from a large number of broilers that were

given diethylstilbesterol tablets injected in the neck. My first impression of Dr. Walters' comments was that he eliminated the poultry waste from his diet because he was convinced it was responsible for the poor production he obtained. Later, in asking him how he happened to eliminate the poultry waste, he stated that the person from whom he obtained it decided to use it to feed hogs; and, therefore, it would not be available.

Dr. Walters stated that a great many of the broilers raised in the north-central part of the State in the vicinity of Rochester are treated with diethylstilbesterol, in spite of the fact that they are marketed as broilers. The reason for this is that less feed is consumed, the bird makes a greater weight, and the profit per bird is greater. He cited the instance of one individual who turns out 1,000 broilers per month, who figured his profits at 16 cents per bird under the ordinary system of poultry management, but these profits were increased to 24 cents per bird when each cockerel broiler was injected with the diethylstilbesterol tablet. Even though the birds are injected at 8 weeks and sold at 12, it was his opinion that broiler raisers felt it was well worth their while to treat the birds. Injection is made by a special hypodermic syringe which injects the pellet just under the skin in the neck. It was his opinion that there are vast quantities of broilers being marketed that are thus treated. I told him of our experience with local poultry men who had not even heard of capettes, but he stated that nevertheless he believed there were many of them marketed; and in his opinion this was perhaps one of the primary causes for poor production among mink fed poultry waste, as the main or as the entire source of meat in the diet.

The poultry waste which Dr. Walters used was obtained for the most part from a local dresser, although when supplies ran short it was also procured through the Eastern Fur Farmers' Cooperative, which in turn obtained it from one of the larger broiler dressing plants in the Delmarva section. He felt that the material obtained from this latter source contained many heads from broilers thus treated.

Dr. Walters has raised mink for many years, and I would consider him a practical mink rancher. I do not attempt to vouch for the accuracy of these statements, and it may be entirely possible that his thoughts, as given above, are based more upon theory than upon actual facts. Nevertheless, he is a good personal friend, and I do not think for one moment that anything that was said was stated in an attempt to mislead us. Because this question has arisen before, and because I thought you might be interested in his opinions, this information is being sent on to you, and copies of this memorandum are also being sent to Drs. Enders, Loosli, and Siebold. It may possibly be that you will wish to have a copy sent on to Dr. Gorham.

CHARLES F. BASSETT.

Carbon copy to Dr. Enders, Dr. Loosli, and Dr. Siebold.

ONE ASPECT OF MINK-BREEDING PROBLEMS

(By Dr. R. K. Enders, Swarthmore College, Swarthmore, Pa.)

Stilbestrol is a man-made hormone of great potency and usefulness. It can be made comparatively cheaply and is freely available because it resulted from research in a Government-owned laboratory. It has been used in England, where it was developed, and is being used here both experimentally and commercially.

Mink ranchers are interested in it for two reasons: (1) It will induce mating in these hard-to-breed females, and (2) some chicken waste containing stilbestrol is fed to mink.

Two years ago studies were conducted on induced matings, using diethylstilbestrol. Last year the material was tested experimentally by many breeders who used it on animals that remained unmated at the end of the breeding season. While not all of the reports have been tabulated, there is overwhelming evidence that diethylstilbestrol will induce mating, and, also, that very few females produce kits after treatment and breeding. One must bear in mind that normal matings at the end of the season are not too productive and that stilbestrol was tried on the females that had refused to breed. What would have happened if the hormone had been given on or about March 15 we do not know. Nevertheless, it is quite clear that, while the hormone will induce mating even at the end of the season, it is of questionable value because the females do not produce kits.

The second point is of vital interest where chicken waste, derived from capettes, is fed. Some ranchers, feeding this material, have met with disaster, for their mink bred well enough but failed to have kits. At least one rancher suffered a 100-percent failure of reproduction and others dropped to production levels of 10 percent. Chicken waste is an important source of food to many ranchers, for it is available and comparatively cheap, and it seems destined to become more important as horse meat becomes harder to get. However, chicken waste from capettes may contain enough residue from the pellet of diethylstilbestrol, which is used in suppressing the testis hormone of broilers, to disturb the reproductive physiology of mink to such an extent as to make them sterile, for all practical purposes. If this is the case, chicken waste can be used with safety on pelters only. Work on rats indicates that the effect of stilbestrol can be overcome by feeding thyroxine. This may be the way to feed chicken waste containing stilbestrol without harmful effects.

At Saratoga Springs experimental work on the feeding of chicken waste has been in progress for some time. At Swarthmore we have worked on the use of hormones in breeding, and lately have been examining ovaries and testes of animals fed chicken waste. Now we would like to expand this work so we could feed chicken waste containing stilbestrol to one group of animals, thyroxine to another, and both stilbestrol and thyroxine to a third group. The experiment being conducted at Saratoga will furnish the control group. If results are to be obtained this spring, animals must be secured at once and the work started.

More and more ranchers are faced with the problem of securing an adequate source of high-protein food at a price they can afford to pay, and chicken waste will continue to be available. If ways to feed it at all safely can be found, both the mink breeder and the poultryman will benefit.

[From the American Fur Breeder, May 1950, p. 6]

The Comparative Value of Some Horse Meat Substitutes

(By Charles F. Bassett and Hugh F. Travis, Fur Animal Experiment Station, Bureau of Animal Industry, United States Department of Agriculture, Saratoga Springs, N. Y.)

Sometime ago a letter was received at the United States Fur Animal Experiment Station from the editor of a fur-farming periodical, who wrote as follows:

"One of our readers has asked me to publish a chart showing the comparative feeding values of horse-meat substitutes. Our subscriber states, 'Instead of an article with a lot of hard-to-understand calories, vitamins, percentages, etc., we would like to see a simple chart comparing the necessary amounts of the substitutes, by weight, as compared to horse meat'."

It is inadvisable to tell a rancher that he can replace so many pounds of horse meat with so many pounds of some other product without considering the complete individual diet, the age and species of the animals being fed, and the time of year when the diet is to be used. In a general way, however, the accompanying chart will give those interested a better idea of the composition and relative value of some of the products available for use as horse meat substitutes.

The primary use of horse meat in the mink diet is to supply protein for body growth and repair, for fur growth, and for the production of young. Horse meat also supplies a certain amount of energy, minerals, and vitamins. In this respect, however, it is not significantly better than some other fresh animal products. The protein content of horse meat is about 18 percent. If all the protein in 100 pounds of horse meat could be separated out and placed in one pile, there would be approximately 18 pounds of protein in that pile. Most ranchers think that all of this protein can be used by the mink, but this is a false assumption. Some of the protein will be found in tendons and ligaments, some in cartilage, some is present in the bone, and some in connective tissue. As a consequence, about 2½ pounds of the 18 pounds of protein present in the 100 pounds of horse meat is not digested by the mink.

The accompanying chart shows the total protein content of horse meat and of 10 other diet ingredients that could and often do serve as substitutes for that product in mink diets. In addition, that portion of the total protein content that is digestible is given. It can be seen that there is considerable variation among the different products: the digestible protein present in horse meat is

INGREDIENT	PERCENT PROTEIN PRESENT: DIGESTIBLE	TOTAL	TOTAL DIGESTIBLE NUTRIENTS %	ESTIMATED COST TO RANCHER, PER POUND, AS PURCHASED: OF INGREDIENT	OF DIGESTIBLE PROTEIN	OF DIGESTIBLE NUTRIENTS
HORSE MEAT	15.6	18.1	24.6	$.08	$.513	$.325
BEEF LIVER	19.0	20.4	31.5	.17	.895	.540
BEEF SPLEEN	15.9	18.9	19.3	.04	.252	.207
BEEF TRIPE	11.4	15.0	15.7	.04	.351	.255
BEEF UDDERS	9.8	12.2	37.4	.04	.408	.107
CHICKEN WASTE	12.7	15.9	37.7	.04	.315	.106
MEAT & BONE SCRAP	38.5	55.0	61.2	.07	.182	.114
FISHMEAL	46.0	56.1	67.9	.10	.217	.128
SOYBEAN OILMEAL	33.2	44.3	72.0	.05	.151	.069
HADDOCK	12.9	14.0	13.1	.06	.465	.457
HERRING	15.6	19.5	31.8	.06	.341	.189

about 15 percent, in fishmeal it is around 40 percent, and in beef udders it is 9.8 percent.

In attempting to determine the relative value of certain diet ingredients as substitutes for horse meat, not only should the usable or digestible protein be considered, but the usable energy present must also be taken into account, and this has been done in the chart under the heading, "Percent digestible nutrients." Horse meat contains approximately 4 percent fat. Some of the other diet ingredients mentioned are good sources of energy, either because they are rich in fat, or because, like soybean meal, they contain starches or sugars. This energy is of value in the mink diet in supplying fuel for the animal's activity and in the storing of fat at certain seasons of the year.

At the extreme right of the chart is shown the estimated cost per pound to the rancher, of the ingredient used, the digestible protein present, and the total digestible nutrients present. The cost per pound of these ingredients is fairly close to the average cost of these feeds to most ranchers. The purpose in presenting these figures is to show the rancher what he gets for what he spends. He can compare the price he pays for these feeds to the price on the chart and obtain a fairly accurate idea of the relative value of the feeds he uses, in terms of digestible protein and energy. Quite often buyers are misled into what may actually be false economy by low priced feeds with a high moisture content, or by relative high priced feeds with a high protein content, much of which is nondigestible.

A glance at these figures shows that, with the exception of liver, every ingredient listed on the chart is a more economical feed ingredient to use than horse meat when the cost per pound of digestible protein and the cost per pound of total digestible nutrients are considered.

Do these figures mean then that because of the low cost of the digestible protein and the high energy content of soybean meal the mink rancher should revise his diet, eliminate all horse meat and viscera, and feed the soybean meal alone? Quite obviously not, for he would be heading straight for disaster should he do so. There are some nutrients required by mink for growth, fur production, good health, and reproduction that are not present in soybean meal.

Similarly, although the cost of the digestible protein in liver, as given on the chart, is the highest per pound of the 11 ingredients shown, it should not be inferred that liver should be left out of the mink diet. Liver is a good source of folic acid, so necessary for the growth and well being of mink. In addition, it also contains vitamin B_{12} and other factors, some of them as yet unidentified, which may be necessary for mink nutrition. It is believed that, if at all possible, the mink diet should contain at least 5 percent fresh or fresh frozen liver, and during the gestation and lactation periods this amount should be increased to 7½ percent.

Another factor that must be considered in evaluating horse meat substitutes is the quality of the protein. By "quality of the protein" is meant the percentage

of digestible protein present that can actually be used for body building, hair growth, and reproduction. Different amounts may be used, depending on the source of the protein. For this reason it is hard to say how much of one protein can replace another without considering the whole diet fed. Two or more proteins of relatively low value may complement one another, thus making available a combined protein of high value.

The purpose of this article is to give the mink rancher a comparative value of certain horse meat substitutes, to show him that there are other products, perhaps more easily available than horse meat, and in all probability more economical, that he can satisfactorily use in feeding his mink.

While there are many questions left unanswered regarding substitutes for horse meat, it is hoped the chart will give the mink rancher a more satisfactory general picture of some of the products that will be used for feeding mink in ever increasing amounts in the years to come. For more specific information a review of numerous articles on the use of meat substitutes, which have appeared in the trade papers in the past, is suggested.

OFFICE MEMORANDUM

JUNE 13, 1950.

To: B. T. Simms, Chief, BAI
From: N. R. Ellis, Animal Husbandry Division, BAI
Subject: Manuscript on poultry waste in the feeding of mink.

Attached for your examination and approval is a manuscript by Charles F. Bassett on "The Use and Misuse of Poultry Waste in the Feeding of Ranched Mink."

Mr. Bassett has explained that he expects to use this material as a talk before the Wisconsin Fur Breeders in Milwaukee on June 22. We have examined this manuscript and believe it presents the information at hand in good fashion.

N. R. ELLIS.

Approved:

S. O. FLADNESS,
Acting Chief of Bureau.

June 15, 1950.

THE USE AND MISUSE OF POULTRY WASTE IN THE FEEDING OF RANCHED MINK

(A talk given at Wisconsin Fur Breeders Association meeting, June 22, 1950, at Milwaukee, Wis., by Charles F. Bassett, Director, United States Fur Animal Experiment Station, Bureau of Animal Industry, Saratoga Springs, N. Y.)

A considerable amount of the research that has been conducted with both mink and foxes at the United States Fur Animal Experiment Station, Saratoga Springs, N. Y., for the past 15 years has consisted of experiments designed to develop suitable substitutes for horse meat in the diets of these two species. Various visceral products, such as lungs, udders, tripe, liver, and blood, have been among the products tested. Fish, both canned and fresh frozen, has also been used. In addition, a number of desiccated products, such as beefmeal, fishmeal, soybean meal, corn gluten meal, cottonseed meal, and peanutmeal, were tested.

Some of these latter products have shown great promise when used as a partial replacement for horse meat in diets fed adult and growing mink during the summer and fall. As a matter of fact, pelts from animals in each of the groups receiving the above mentioned desiccated feeds as replacements for half of the horse meat were, on the average, superior in every instance to pelts from those animals receiving the horse meat but no desiccated products.

To me, the results of these numerous feeding trials emphasize one very important fact to all mink ranchers. While the supply of old horses available for use in the diets of both mink and foxes is constantly dwindling and in many areas is becoming too scarce and too expensive for general use, still the mink rancher need not become unduly alarmed concerning what he is going to feed his mink. Research has already uncovered substitutes that in many instances are superior to and less expensive than some products now in use.

Furthermore, no one can foresee when some product, now considered as useless, or of little value, may, through research and practical feeding, prove to be a highly desirable feed ingredient for the mink diet. An example of this is poultry waste.

Three or four years ago this product was used only by the small-mink rancher, and then not with any great regularity. Today it is being used in greater and greater amounts, particularly in the East and Middle West. On some ranches, this product constitutes the entire "meat" portion of the diet fed to mink. Its continuously increasing popularity is due to two factors: It is easy to obtain and relatively inexpensive.

Its use, however, has brought forth additional problems for the mink-ranching industry as a whole. Used under some circumstances at certain seasons of the year for feeding mink, the results can be disastrous. Under other conditions and circumstances, its use can be most satisfactory. Because of this fact, it seems advisable to discuss here the use and misuse of poultry waste.

PROCURING AND PROCESSING POULTRY WASTE

"Poultry waste," as the term is used in this discussion, consists primarily of uncooked heads, feet, and entrails of chickens. Individuals who use poultry waste should obtain it at intervals from a local or nearby poultry-dressing plant. Poultry waste obtained from meat markets is not recommended for use in feeding mink for a number of reasons.

It is assumed that the rancher will be sufficiently interested in the welfare of his mink to insure the procuring of material from freshly killed and freshly dressed birds. We assume, furthermore, that such material will be refrigerated at a sufficiently low temperature to prevent spoilage from the time the bird is drawn until the discarded viscera is picked up, and that adequate protection in the form of shade and rapid transportation will be provided on the trip to the home ranch to insure its arrival at the feedhouse in first-class condition. It is desirable, of course, to avoid letting such material stand on a truck in the hot sun during the summer, as it deteriorates rapidly.

In many instances, poultry waste is procured by ranchers through their local cooperative. Under such circumstances, the manager of the cooperative must assume the responsibility of seeing that the poultry waste is obtained from a reputable processor, properly frozen and stored until delivered to the co-op members.

After its arrival at the ranch, the poultry waste should be ground at once and used in the feed mixture immediately, or frozen and stored for future use. In grinding the poultry waste, no attempt is made to remove the intestinal contents, since few mink ranchers have the equipment necessary for hashing and washing. Gizzard linings and their contents, as well as metal or celluloid bands on the legs, should be removed prior to grinding, not only to prevent injury to the mink but to avoid damage to the grinder. Carcasses of diseased or thin-breasted birds should be discarded without question.

SHOULD POULTRY WASTE BE COOKED?

The object of cooking poultry waste before feeding is to avoid the risk of losses due to food-poisoning organisms that may be present in the waste, particularly those of the Salmonella group. Most mink ranches and a number of authorities in the industry feel that such a practice is advisable. Our results to date, while not conclusive, do not support this viewpoint.

Cooking renders poultry waste less palatable to the mink. Try feeding cooked and raw poultry waste to a small number of mink on your ranch for a month and see for yourself which group eats their food with the most relish.

To date we have conducted five experiments feeding poultry waste to a total of 334 mink at the station since the summer of 1947. On these experiments a total of 23 adults and 3 kits have died. Nine animals that died were sent to the Pathological Division of the Bureau of Animal Industry, Washington, D. C., for postmortem examinations, and not a single one autopsied to date has shown the presence of Salmonella organisms.

Is it not reasonable to suppose that, if poultry waste is such a dangerously infective source of food-poisoning organisms, some trace of these organisms could be found in the animals autopsied?

Whether or not poultry waste should be cooked is a question that must be decided by each individual rancher. While the information given above is not conclusive until adequate evidence to the contrary is presented, we believe that the mink rancher who uses properly refrigerated and properly processed poultry waste from freshly dressed, healthy birds will not find cooking necessary.

If ranchers are going to be careless about the poultry waste they process, and sloppy in the manner in which it's handled after the chicken is dressed and before

the material is fed to the mink, it had better be left out of the diet entirely, for much grief can follow the use of this product when it is improperly handled.

YANKEE BREEDING FARMS,
Huntington, N. Y., April 23, 1949.

Mr. CHARLES F. BASSETT,
Director, United States Fur Animal Experiment Station,
Saratoga Springs, N. Y.

DEAR MR. BASSETT: Upon receipt of your letter of April 21, 1948, I secured one 80-gallon steam-jacket kettle. Before long I expect to get a boiler to furnish steam to it.

Have you had any experience during the last year that might make it advisable to revise the feeding schedule furnished me at that time?

I saw an article in one of the magazines that created some doubt in my mind regarding the quality of the pelt. It used the term "pullers."

If you still think it wise, I am going to put my ranch on the schedule that you furnished me in your last letter. I may have to make the fish content a little greater than you suggested, because chicken waste is not too abundant around here.

The change-over will take place about the 1st of July.

I intend to feed the chicken waste freshly secured without cooking; but, when it has to be held over in the refrigerator for 2 days, to cook it.

Carrots are very cheap in this section. Do you think there would be any point in including some of them in the diet? If so, should they be cooked for best results?

Have you had any reports from ranchers that used the schedule that you gave me? Did the diet affect reproduction?

Appreciating your assistance, I am.

Very truly yours,

DOUGLAS MILLAR.

P. S.—The fish mentioned will be raw whole ocean fish.

D. M.

APRIL 28, 1949.

Mr. DOUGLAS MILLAR,
176 Old South Path, Huntington Station, Long Island, N. Y.

DEAR MR. MILLAR: I was glad to receive your letter of April 23 and note that you have at last been able to procure a steam-jacketed kettle. This should assist you greatly in your ranching operations, particularly as regards the cooking of some of the feeds that you will use.

Most of those who are in a position to know believe it is advisable to cook chicken waste in order to prevent Salmonella poisoning, which is generally a chronic condition that causes some losses in the mink herd. I do not know enough about the situation to intelligently advise you, but it has not been our practice here, as a general rule, to cook the poultry waste that we use. We have had some losses, but we always have losses, for that matter, and I cannot honestly say that there have been any noticeably larger number of animals lost when the uncooked poultry waste was used. This, however, is a matter that each individual rancher must decide for himself.

There is little in the way of new information on the feeding of poultry waste that has been discovered since last I wrote you. Our production was exceedingly poor in the spring of 1948, and we did not have kits in the numbers desired for experimental use last summer. I still think you can very satisfactorily use poultry waste in the summer and fall feeding of both adult mink and kits; but, as yet, we know little if anything about its value during the reproductive cycle. Since last year I have had reports of exceedingly poor production from three individuals who used poultry waste as the sole meat source in the diet fed their mink. One individual, as I recall, had 125–150 breeding females, and from these he obtained a total of 20–25 kits last year. It is difficult, of course, to evaluate the probable cause of such a condition. He feels certain it is the poultry waste that he used. On the other hand, there may have been other factors of which he is unaware that were responsible for the poor production. My suggestion in this respect would be to go easy and use small amounts, making up a diet that is safeguarded insofar as possible by the use of other animal and fish products and by proper supplementation with cereals and some of the more potent vitamin carriers. For this reason, I believe that the diet I suggested in my letter of

April 21, 1948, would still be satisfactory to use during the coming summer. You will find that the fortified cod-liver oil can be omitted; and, if you find it difficult to obtain fat, at a reasonable price, I would suggest that this ingredient be eliminated and that something else be substituted in its place. Any potatoes that are used should be of the 1949 crop, unless you can obtain good, solid, firm potatoes that have not sprouted as yet. I presume this would be rather difficult in July of this year; so perhaps your best bet would be to get along with carrots, apples, or similar products until the potato season arrives, when I should think it would be possible to obtain a considerable number of cull or No. 2 potatoes from the Long Island growers.

If I were to revise the diet I suggested last April, it would be as follows:

	Percent
Poultry waste	17.5
Horse meat, fish trimmings, lungs, udders, tripe, etc	17.5
Liver (fresh or fresh frozen)	5.0
Cereal	20.0
Fat	10.0
Water or skim milk	30.0
Total	100.0

You can replace 5 pounds of cereal and 10 pounds of water with 15 pounds cooked potatoes or 15 pounds carrots, if you wish. I look upon carrots primarily as a filler, since it is questionable whether there is very much nourishment from them that the mink uses.

I hope this answers the questions that you raised. I would be interested in hearing from you as time goes on and you have an opportunity to try out some of the above suggestions.

Very truly yours,

CHARLES F. BASSET, *Director.*

YANKEE BREEDING FARMS,
Huntington, N. Y., September 20, 1949.

Mr. CHARLES F. BASSETT,
Director, United States Fur Animal Experiment Station,
Saratoga Springs, N. Y.

DEAR MR. BASSETT: For some time I have been hoping to be able to get away for a few days so that I could come up and discuss some of the problems that have come up. It looks now that I will have to forego that idea for this year.

Your letter of April 28 was very interesting and I appreciate the attention that you have given my questions. You were absolutely right about not being able to secure the potatoes on July 1.

The chicken waste that I was going to get is now coming through with diethylstilbestrol. This would require making two mixes daily. One for the pelters containing the chicken waste with the caponizing agent and the other from our regular ingredients. Several very good buys have made it easy to decide what to do for the balance of this year.

I believe that the unfortunate experience that you report about the rancher that used poultry waste was due to it containing this caponizing agent, or else they may have had salmonella poisoning during the gestation period.

Here are the good buys that I mentioned. Horse meat at 4 cents a pound (without bone). Frozen ocean fish 2¼ cents a pound. Frozen freshly packed rabbit with bone in at 2 cents a pound. Potatoes at 50 cents per hundredweight. Beef suet at 6 cents per pound.

Will you let me know what you think of the following mixture for this time of the year?

Horse meat, 20 percent; rabbit, 10 percent; fish, 35 percent; beef suet, 5 percent; cereal, 25 percent; potatoes.[1]

The manufacturer claims that the cereal contains 7½ percent liver meal. I know that you would prefer fresh liver, but the price of it is prohibitive.

I left out the name of the manufacturer of the cereal on purpose. It is a responsible outfit that should know how to make mink cereal, but I believe that a satisfactory cereal could be mixed on the ranch for a good deal less than what

[1] While we put in 15 pounds of cooked potatoes, we consider them equal to 5 pounds of cereal.

we pay. Can you furnish me with what you believe are the proper percentages of the various items that should be included in a good mink cereal?

I have in mind using liver meal for most of the year, but will save any liver (fresh) that we get for the breeding and whelping seasons.

The manufacturer of the cereal that we are now using suggests using 32 percent. The suggestion in your letter of April 28, 1949, about potatoes is where I secured the idea of 15 pounds of cooked potatoes, instead of 5 pounds of cereal. Thanks again.

Do you ever have occasion to come to New York City? If so I would like to arrange to meet you and go over some of the things on my mind if you could spare the time?

Appreciating your assistance and looking forward to your reply, I am

Very truly,

DOUGLAS MILLAR.

SEPTEMBER 23, 1949.

Mr. DOUGLAS MILLER,
Yankee Breeding Farms,
176 Old South Path, Huntington Station, Long Island, N. Y.

DEAR MR. MILLER: Thanks very much for your letter of September 20.

The suggested effect of diethylstilbesterol upon possible production in mink was something that had never occurred to me. I am going to write a letter to Dr. Robert K. Enders of Swarthmore College, who has cooperated with us on many of our reproduction experiments, to find out if he knows anything about the possible effect of such a product upon reproduction in mink. At any rate, you would not want to use poultry waste with this product in it until it was definitely established whether the results might be detrimental or not.

At the prices quoted for the different ingredients mentioned, it certainly should not be hard for you to evolve an economical ration for your mink and foxes. My reaction to the diet that you suggest is that it contains more meat and fish than is necessary. However, as you have indicated, this material is relatively inexpensive, and I do not know of any ingredients available in adequate quantities that you could obtain the year around at more economical prices. The most important consideration of all, of course, is the way the mink and foxes eat the diet and the production that is obtained from it. It would be my opinion, based upon such information as is available to date, that the diet is perfectly satisfactory except that it is a little heavy in meat. I would not recommend going above the 25 percent cereal level, but again there is a question comes up in this respect. With the ration made up of 25 percent horse meat, 10 percent rabbit, 35 percent fish, 5 percent beef suet, and 25 percent cereal, you have a total ingredient content of 95 percent without any cooked potatoes being added. I assume that it is going to be necessary to add water to this diet, for our experience has indicated that 1 pound of most of the cereal mixtures we have used will take up 1½ pounds of water. If this is the case with the cereal you use, then it will be necessary for you to add 37½ pounds of water to this mixture, which in turn would give you 132½ pounds of mixture. If one considers this amount as equal to 100 percent, then the total content of meat, fish, and rabbit runs only approximately 49 percent, which certainly is not out of line.

In the above calculations I have entirely omitted the potatoes, although I note from what you have written that you include some in your diet.

As you have surmised, I much prefer the use of fresh liver to liver meal. I know you find it difficult to obtain fresh or fresh frozen liver at reasonable prices, but how about contacting the branch houses of some of the larger packers such as Armour, Wilson, Swift, or Cudahy, to see if it would be possible for you to obtain Telang livers. Such livers I imagine can be procured for 15 to 18 cents a pound in 500-pound lots, and we have recently bought Telang pork livers from Swift & Co. for 11 cents.

I generally get to New York City about once a year the latter part of February or in early March in connection with the fur studies made on the previous year's mink and fox pelts. My stay is never over 2 days, and of course I am busy every minute in connection with those studies. I would like very much to meet you and talk over some of the questions that you have raised, but judging from past experience I know it is just not possible to do it when I am in New York on the fur studies trips.

Very truly yours,

CHARLES F. BASSETT, *Director.*

WICK & FRY LABORATORIES,
Cumberland, Ind., May 23, 1950.

TRABERT MINK RANCH,
Elgin, Ill.

DEAR MR. TRABERT: I am enclosing a booklet which I believe will answer most of the questions that were asked in your letter of May 16, and as to those it doesn't answer I will do so here.

1. The cocks will regain their fertility after the effects of the pellet have completely worn off; however, there is a difference in individual birds sometimes and they do not lose the effect entirely and in those individuals normal activity is not completely regained.

2. There is definite danger of sterilizing both animals, male and female, if fed a large amount of the heads that have been removed from treated birds because, though the amount in each head would probably be quite small, the concentrated amount in a number of heads could be sufficient to cause at least temporary sterility, though they should revert to normal after the effects did wear off.

Sincerely yours,

W. S. DAVIDSON.

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